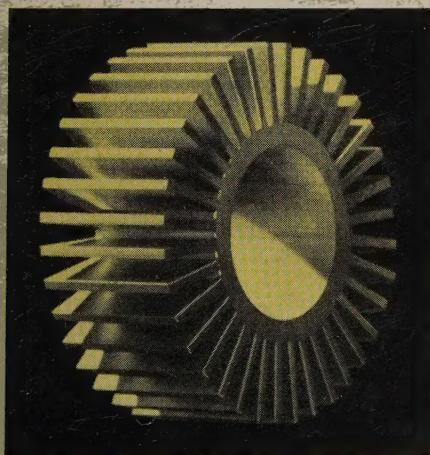
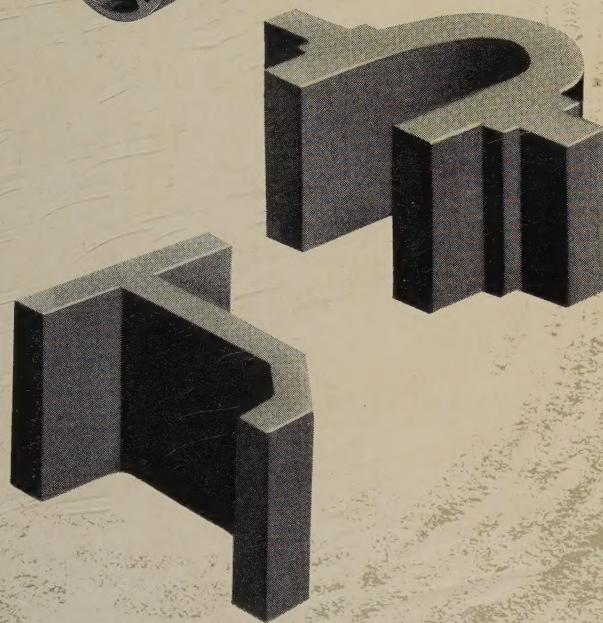


MAY 9, 1955

STEEL

The
Metalworking Weekly



EXTRUSIONS...

Made-to-measure economy

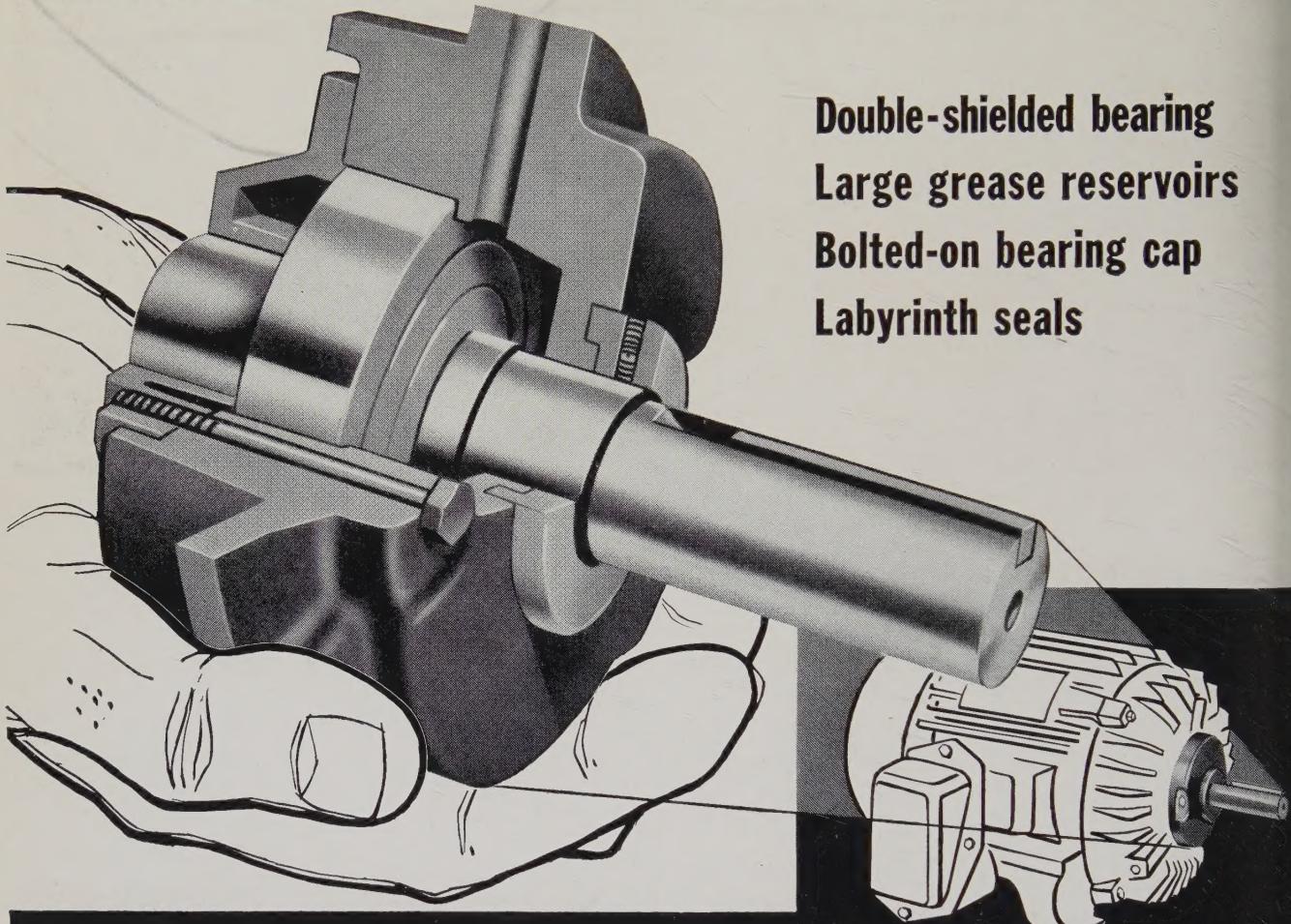
page 78



- ✓ Labor Pot Nears Boiling Point
page 45
- ✓ Warehouses Adapt to Markets
page 131

CONTENTS — PAGE 5

Here Is Extra Motor Value



Double-shielded bearing
Large grease reservoirs
Bolted-on bearing cap
Labyrinth seals

This Allis-Chalmers Bearing Design Gives More for Your Motor Dollar

The bearing cap is held tightly in place against the inner face of the bearing enclosure. This cap, with its close running clearances, keeps grease from the interior of the motor . . . retains an ample supply within the bearing enclosure.

At the outer side of the bearing, double labyrinth seals keep grease in, also keep dirt out. What's more, large grease reservoirs act as additional dirt traps.

You can lubricate these bearings without disman-

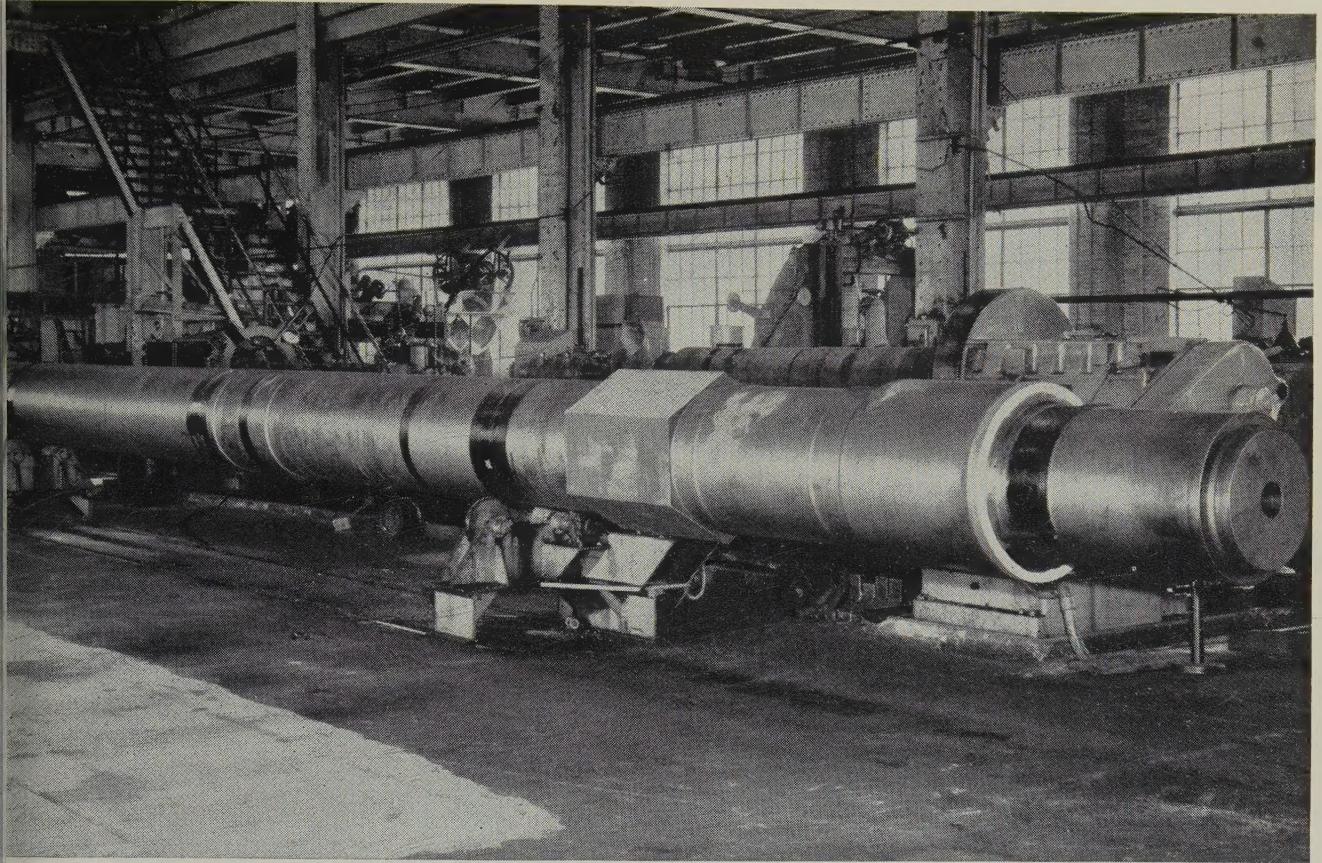
tling motor. Pipe-tapped holes in the bearing housings at two points provide means for inserting new grease, flushing out old grease and of relieving pressure during re-greasing.

Look for the extra bolts on the end housing . . . the sign of greater value. Ask your Allis-Chalmers representative or Authorized Distributor to show you a cutaway section of this maintenance-cutting design. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B7225.

A-4616

ALLIS-CHALMERS





Forged-steel shaft weighs 42 tons; will be used in mine hoist

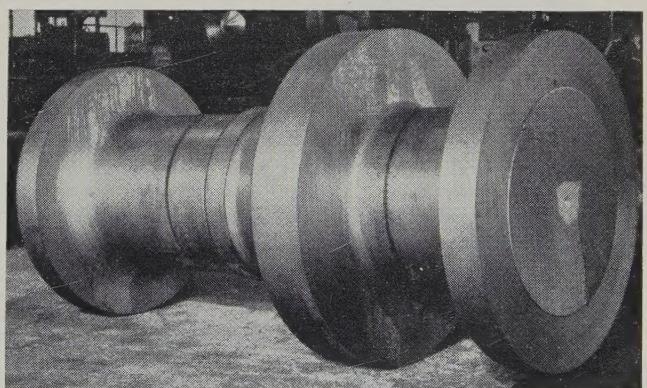
Above is an interesting carbon-steel forging that is destined to become the shaft for a large mine hoist. As you can imagine, a tremendous amount of work had gone into it before the photograph was taken. The piece was forged, heat-treated, rough-machined, and smooth-bored in the Bethlehem shops, and as you see it here, it weighs in excess of 42 tons. It is 43 ft. 8 in. long.

Forgings like this require special facilities, and Bethlehem has them. We can readily turn out pieces that run a hundred tons or more. On the other hand, we are equally well prepared to produce much lighter items, such as the forging shown in the smaller picture. That one, a thrust shaft, doesn't weigh a full nine tons.

Shafts, of course, are but one of the many types of forgings that Bethlehem makes each year. Through our shops pass everything from giant steel columns to little drop forgings that you can hold in one hand. Whenever you need a forged product of any size, type, or weight, Bethlehem is fully

prepared to make it for you and offer a good delivery date.

And please remember, too, that we are always set up to rough- or finish-machine — to your exact specifications.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



7 WAYS to SAVE MONEY with TOCCO* Induction Hardening



1

Cost was reduced 94% when heat-treatment of this corn-harvester part was changed from carburizing to TOCCO-hardening, 9½c saved on every piece — \$4750 on each 50,000 piece batch, plus an hourly production increase from 120 to 300 pieces per hour.



2

\$375 per day! When Salisbury Axle switched to TOCCO-hardening axle shafts. Less machining—30 seconds instead of 2 minutes—means lower tool cost. Also production zoomed from 50 to 120 per hour. TOCCO hardened shafts have 200% greater torsional life.



3

Kearney & Trecker Corp. reduced the cost of hardening this milling machine part from \$1.57 to 10c apiece. In addition TOCCO made possible a switch from alloy to S.A.E. 1045 steel—saving another 11c per piece in material cost. Kearney & Trecker hardens 140 different parts on one TOCCO unit.



4

Thompson Products Ltd. boosted production of these automotive wrist pins from 500 to 1200 per hour when they switched to TOCCO-hardening. Costs fell from \$5.45 to \$3.25 per hundred parts—a savings of 2c per pin, \$26.40 per production hour.



5

Mechanics Universal Joint Division of Borg-Warner reports a 69% savings in the hardening of stub ends for propeller shafts. TOCCO also upped production from 35 to 112 parts per hour—over three times as fast as conventional heating methods.

Lima-Hamilton Corporation adopted TOCCO for hardening this shifting lever. Results: a savings of 4c per piece—\$25 per production hour. TOCCO costs only 17% of former heating method. This is only 1 of 139 parts TOCCO-hardened by Lima-Hamilton Corp. All show savings over usual heating methods.



6

7

Number 7—the lucky number—is up to you! Why not add your name to the list of companies who use TOCCO Induction Heating to increase production, improve products and lower costs. TOCCO engineers are ready to survey your plant for similar cost-saving results—without obligation, of course.

THE OHIO CRANKSHAFT COMPANY



TOCCO

*Trade Mark Reg.
U. S. Pat. Off.

Mail Coupon Today

NEW FREE
BULLETIN

THE OHIO CRANKSHAFT CO.

Dept. S-5, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating."

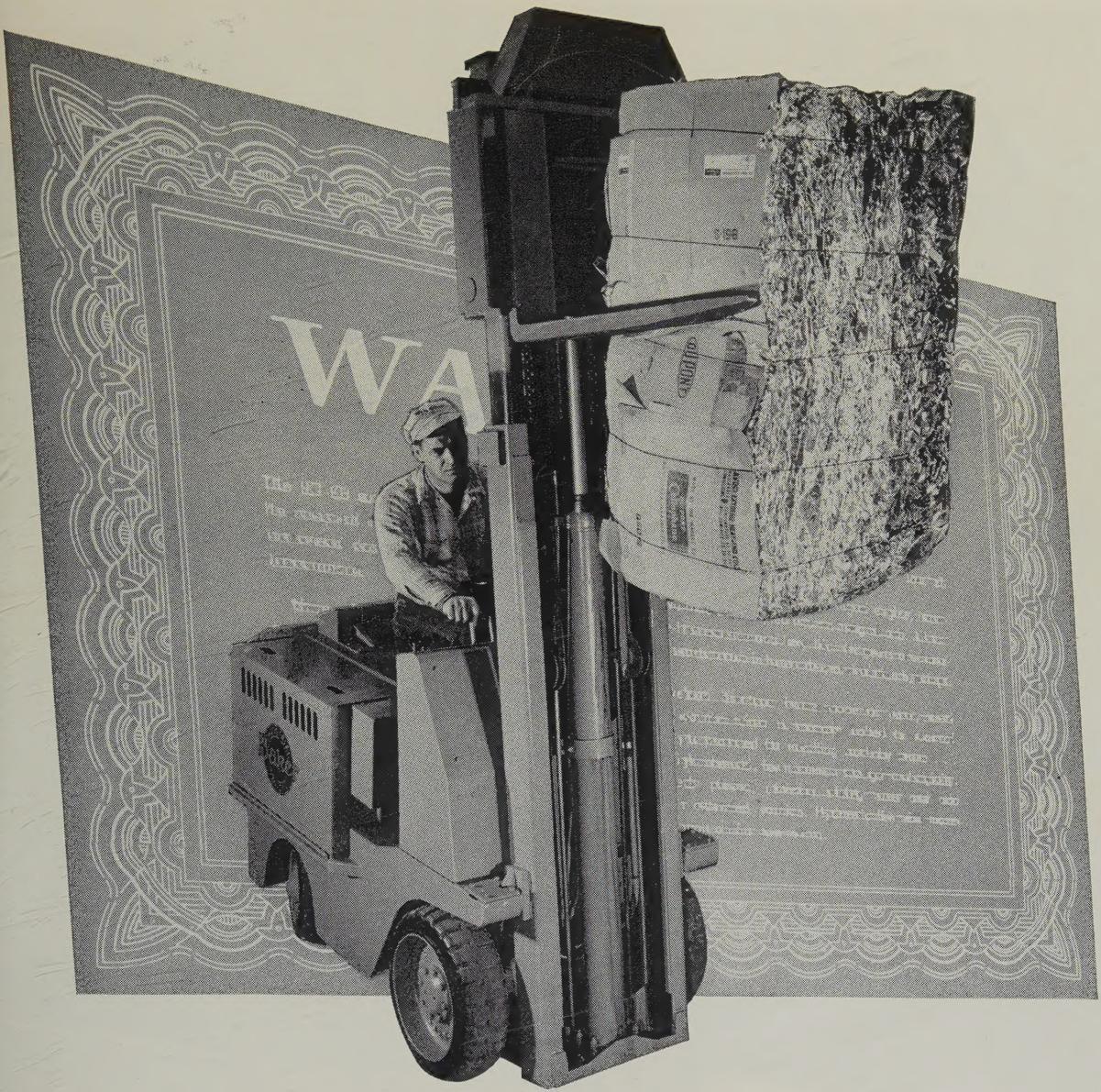
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Position _____

Company _____

Address _____

City _____ Zone _____ State _____



Insist on a...

ONE YEAR WARRANTY

when you buy an electric fork truck

All Baker battery-powered industrial trucks—including fork, platform, crane trucks and tractors—are warranted against defects for a full year from date of shipment.

As a truck purchaser, you should accept nothing less.

A one-year warranty assures you that the manufacturer has complete confidence in the materials and workmanship that go into his product. It gives you twelve months protected operation of the truck *under your conditions*—allowing ample time to detect imperfections, which might not show up during a 30, 60 or 90 day guarantee period.

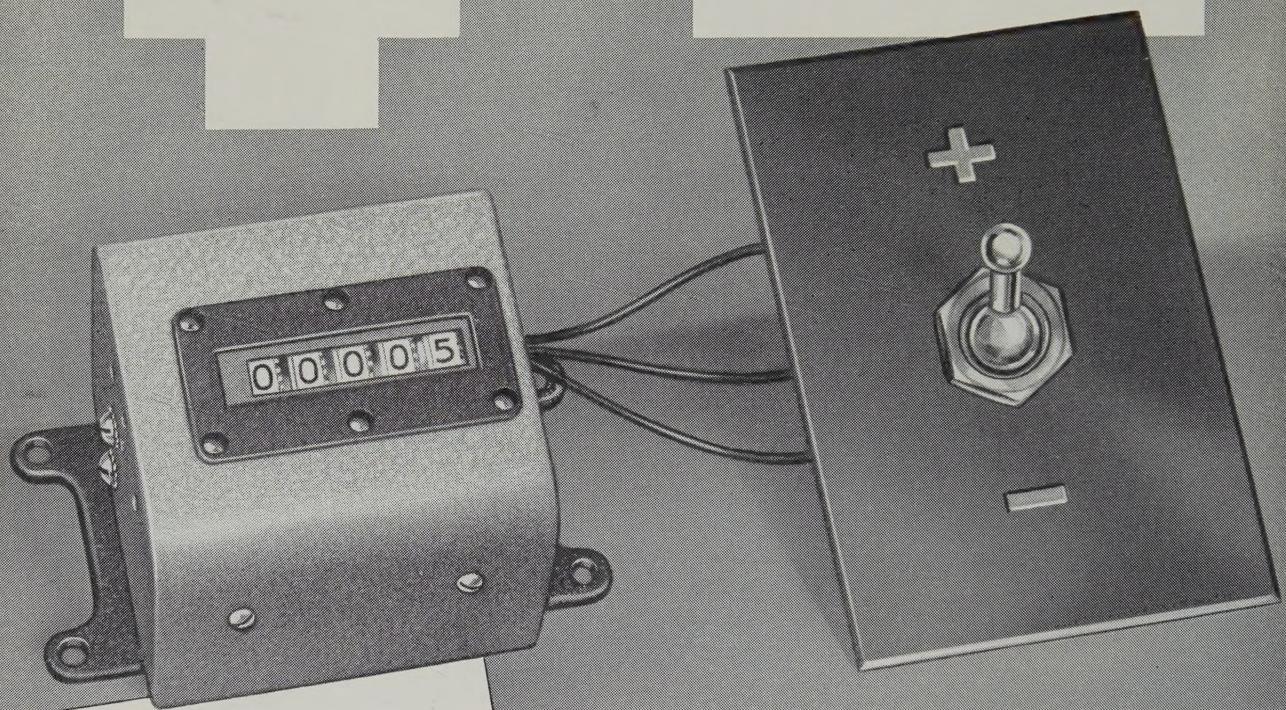
Baker Trucks have a half-century reputation for outstanding performance, long life and low maintenance. For example: a fleet of the first Baker ram trucks ever built is still in service at a large midwestern steel mill after 32 years!

Let a Baker handling engineer give you the full story, or write for Bulletin 54B. The Baker-Raulang Company, 1259 West 80th Street, Cleveland 2, Ohio.

Baker®
handling equipment

This Magnetic Counter

Adds and Subtracts



*Added Evidence
that —*

Everyone Can Count on
VEEDER-ROOT

Flip the switch up . . . the counter adds. Flip it down . . . it *subtracts*. And this 2-way countability makes this new counter a distinct asset to modern systems of automation, control engineering and stock control. Readily adaptable, easily installed and connected to existing circuits, the Veeder-Root "plus or minus" counter is a reliable double-

check on the operation of machines, processes, systems. And it's just one of scores of standard and special Veeder-Root Counters for every field of reckoning from atomics to electronics to automation. What is *your* counting problem? Let's put a mathematical eye on it . . . write:

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HARTFORD 2, CONNECTICUT



Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

"The Name that Counts"

MAY 9, 1955

Vol. 136 No. 19

✓ METALWORKING OUTLOOK, 39

The Editor's Views, 43

Truck Trailers Roll Along, 47

A near-record dollar volume is likely in 1955

Metamorphosis at Clevite Corp., 49

It's diversifying management as well as products

Management at Work, 55

Mr. Visser's Motto: New Models for Competition

Builders Hardware To Lock Up Peak Sales, 56

Booming construction booms this old industry

Speakers Bureaus: Industry Finds Its Voice, 57

How and why companies welcome speaking engagements

Windows of Washington, 52

Behind the Scenes, 6

Mirrors of Motordom, 59

Letters to the Editors, 10

The Business Trend, 63

Calendar of Meetings, 25

Men of Industry, 67

Helpful Literature, 114

New Products, 103

✓ TECHNICAL OUTLOOK, 77

Extrusions Put Squeeze on Costs, 78

You can save on machining and scrap when you start with a shape close to cross section of finished part

Steam Heat Treating Boosts Processing Efficiency, 82

Steam atmosphere provides: Scale-free work, imparts wear, corrosion resistance, minimizes the finishing operation

Sinter Makes Blast Furnace News, 88

It is estimated there is a potential of 20 per cent added to the output of furnaces using sinter charges

Salt Spray Passes Acid Test, 92

Much maligned, salt spray testing is due for a new lease on life. Acetic acid in the spray makes the difference

Duplication Licked with Two-In-One Tooling, 98

Here's a machine which works on two different parts in any order and senses the difference between them

✓ MARKET OUTLOOK, 117

Steel Operations, 117

Nonferrous Prices, 122

Price Comparisons, 118

Steel Prices, begin 124

Nonferrous Roundup, 120

Scrap Prices, 142

Editorial & Business Staffs, 16. Advertising Index, 147. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 W. 39th St., New York 18, N.Y.

**A MARK
to
Remember**



For over three quarters of a century, the Seymour trade mark has been a symbol for the finest quality NICKEL SILVER — PHOSPHOR BRONZE — BRASS — NICKEL ANODES — BRIGHT NICKEL PROCESSES — WELDING RODS and other non-ferrous products.

It has also been a symbol for Seymour SERVICES — speedy, same-day acknowledgment of orders and inquiries — expert engineering and metallurgical help in selecting and specifying non-ferrous metals for special applications.

Fine, dependable products and fast, friendly service . . . these are the qualities which have made the Seymour sunburst a trade mark to remember.

In the months ahead you will see and hear a lot more about Seymour and the products it manufactures. The news will come from Seymour distributors and Seymour representatives.

Watch for it. Listen for it.

MARK IT WELL!

**THE SEYMOUR MFG. CO.
500 FRANKLIN STREET
SEYMOUR, CONN.**

NEW YORK SALES OFFICE:
CHANIN BUILDING — CABLE, SEYMOURCO

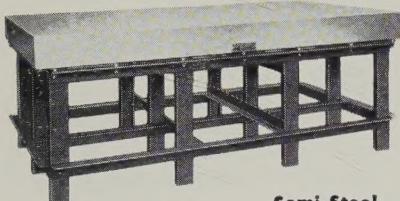
NOW **TWO** TYPES
OF CHALLENGE SURFACE PLATES



NEW!
CLOVIS BLACK
GRANITE
Rated Class A.
Surface accuracy
guaranteed.

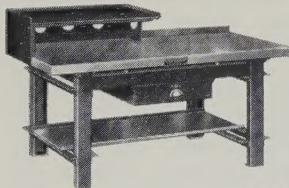
FINE GRAIN
SPECIAL
ANALYSIS
SEMI-STEEL
Precision ground
or hand-scraped

STILL **ONE** STANDARD
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Semi-Steel
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High compressive strength . . . Low coefficient of expansion. 16 standard sizes, 6" thick — other sizes to order. Also available for sectional assembly into unlimited sizes.



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Work Benches

Four sizes, three styles. For individual use or on a continuous line. With self-contained storage facilities.

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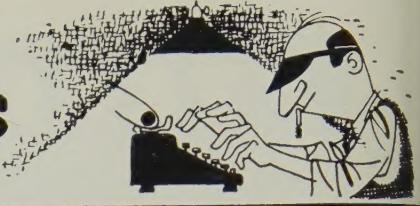
Clamp Edge Layout Plates • Reading Tables • Lapping Plates • Welding Tables • Surface Plates • Bench Plates • Surface Plate Equipment.

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Office, Factories and Show Room:
GRAND HAVEN, MICH.

behind the scenes



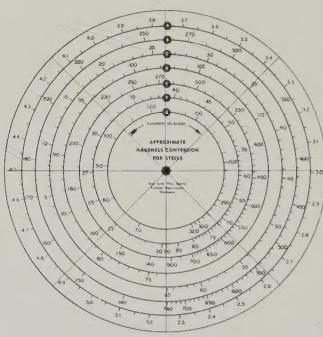
Solemn Pride

STEEL's editors get a lot of satisfaction out of helping and informing the metalworking world. One measure is the letters they get from you, their readers. They were particularly impressed by a cordial letter from Joe Oberle, supervising metallurgist, Research Dept., Caterpillar Tractor Co., Peoria, Ill. Mr. Oberle took the trouble to compliment STEEL's Technical Editor Dr. Allen Gray on the publication of the Hardness Conversion Nomograph (STEEL, Jan. 10), calling it "... another of the many services your magazine has rendered the metallurgical field."

(prepared by Dr. Gray) is creating something of a sensation. Judged by 1954 standards, heat treating can trim costs and maintain and improve product quality. Industrial heat treating technology has come up faster during the last few years than most manufacturers realize. STEEL is presenting the series to help management men take advantage of the cost-cutting potential inherent in modern heat treating.

In connection with the article that appeared Apr. 11, "Vacuum Heat Treating," a waggish reporter observed that if metal were improved in a vacuum, it would be a case of good from nothing.

While we're on the subject of heat treating and tempering, we should pause a moment in solemn contemplation of the early slaves who helped temper Saracen swords. It is written in history books that Saracen metallurgists obtained superior swords by heating them properly, and then quenching the heated weapons in pot-bellied slaves. The only moral we can infer from this is that the next time you think you have a burning pain in your stomach, you just *think* you have, brother!



Beyond that, Mr. Oberle incorporated the nomograph into some sort of circular slide rule, which is laminated in transparent plastic and marked with rules for quick identification. "While the present device is crude," Mr. Oberle wrote, "it has served the purpose quite satisfactorily, and the idea may be worth-while passing along to others. Some company may want to use it as an advertising device. Since your publication first reproduced the nomograph, we submit the model to you for whatever use or publicity you may wish to give it. Our thanks again for many services you have rendered, and our best wishes for the future."

Helpful Heating

Other evidence, currently stacked high in the form of letters on Editor Irwin Such's desk, reveals that STEEL's Modern Heat Treating Series

Meet Raymond

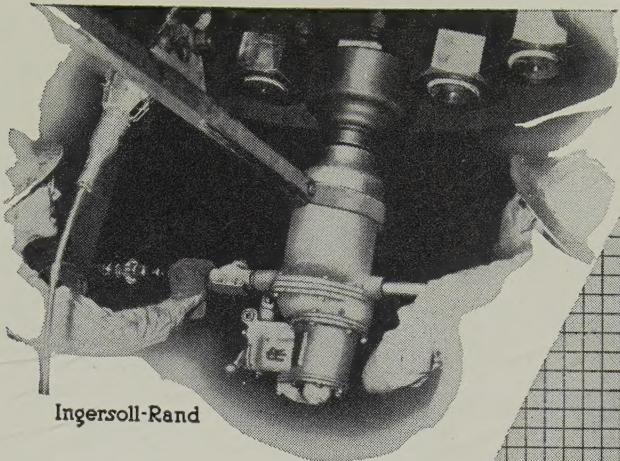
Don Horwitz, the indefatigable genius of U. S. Bedding Co., St. Paul, sent in the first correct answer to the anagram puzzle: 1,578,528,000. The equally unstumpable Max Bailey, Machine Products Corp., Montreal, Que., sent an answer that lacked the final zero, but we assume it was a typographic error.

How about this one: Here is a number, which we will call Raymond. It is made up of three digits (from left to right) named Jean, Baptiste and Achille. The sum of Jean, Baptiste and Achille is identical with Jean Baptiste, while the sum of Jean and Baptiste equals Achille. What number does Raymond impersonate?

Shrodlu

Nuts and Bolts...

Tightening and removing 5" diameter nuts and 3 $\frac{1}{4}$ " diameter bolts on a 115,000 HP Hydro-Generator! A rugged task, but this rugged Air Impactool is equal to it! And, like so many hard-working tools, it uses hard-working anti-friction bearings. Federal Ball Bearings, of course!



Ingersoll-Rand

So much of industry turns on FEDERAL ball bearings

In tough jobs or rough roads...in the machine shop, office on the farm. Wherever anti-friction problems need to be solved—that's where you'll find Federal Ball Bearings at work. There are hundreds of types—12,000 sizes—and they're produced by a 50-year-old manufacturer of ball bearings exclusively!

When Federal Ball Bearings are part of so many things you see, shouldn't they be part of the things you make?

THE FEDERAL BEARINGS CO., INC. • POUGHKEEPSIE, N. Y.

Latest ball bearing and engineering data! Full 175 pages of it—in FEDERAL'S NEW CATALOG! Just speed us your request and we'll speed you back your copy!

For Ruts and Jolts...

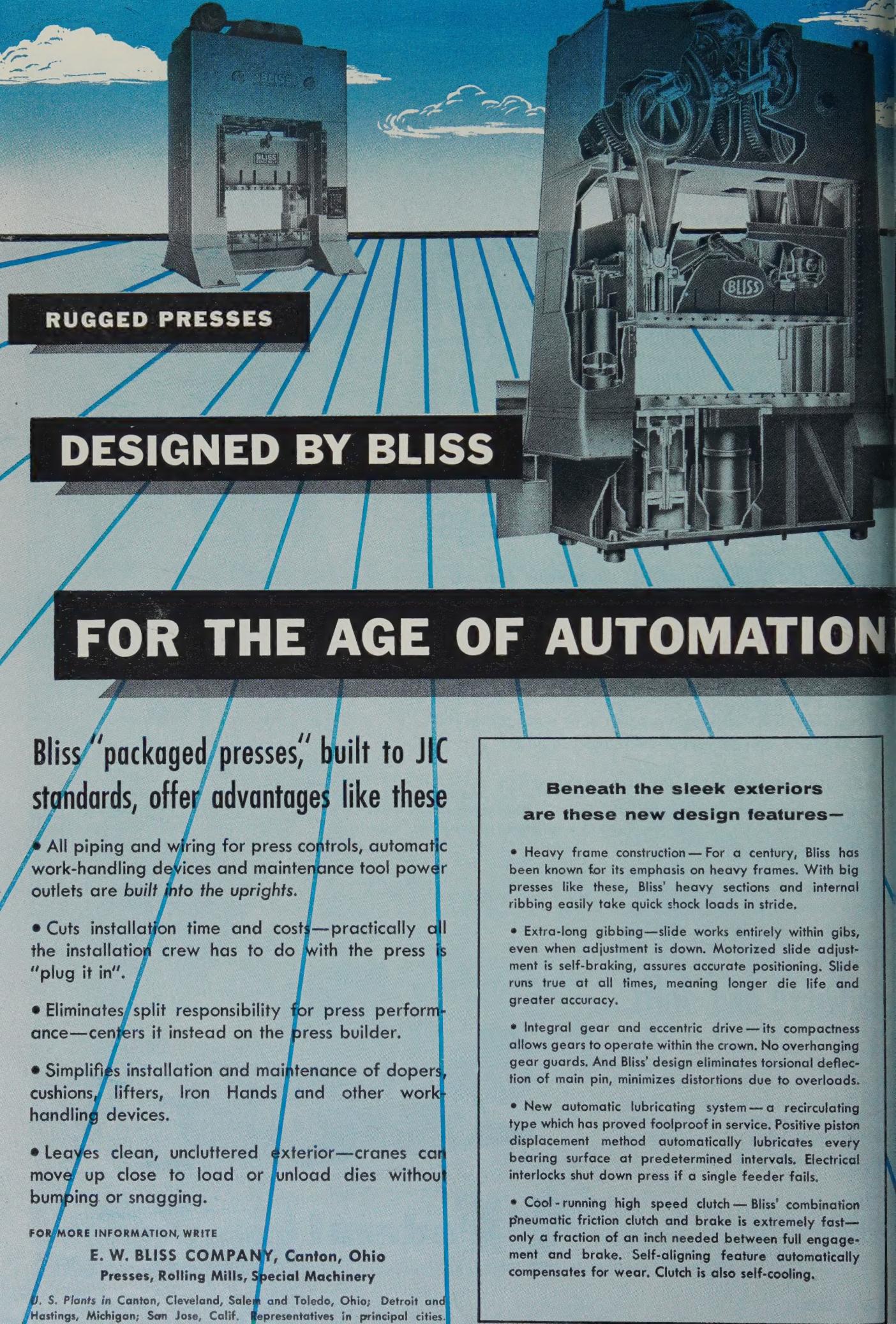
Our old friend the Jeep—new CJ model. As ever; daring, dependable, durable—on the road or off! It, too, is served by reliable Federal Ball Bearings—doing their anti-friction job in the gear transmission.



Federal

BALL BEARINGS

One of America's Largest Ball Bearing Manufacturers



RUGGED PRESSES

DESIGNED BY BLISS

FOR THE AGE OF AUTOMATION

Bliss "packaged presses," built to JIC standards, offer advantages like these

- All piping and wiring for press controls, automatic work-handling devices and maintenance tool power outlets are built into the uprights.
- Cuts installation time and costs—practically all the installation crew has to do with the press is "plug it in".
- Eliminates split responsibility for press performance—centers it instead on the press builder.
- Simplifies installation and maintenance of dopers, cushions, lifters, Iron Hands and other work-handling devices.
- Leaves clean, uncluttered exterior—cranes can move up close to load or unload dies without bumping or snagging.

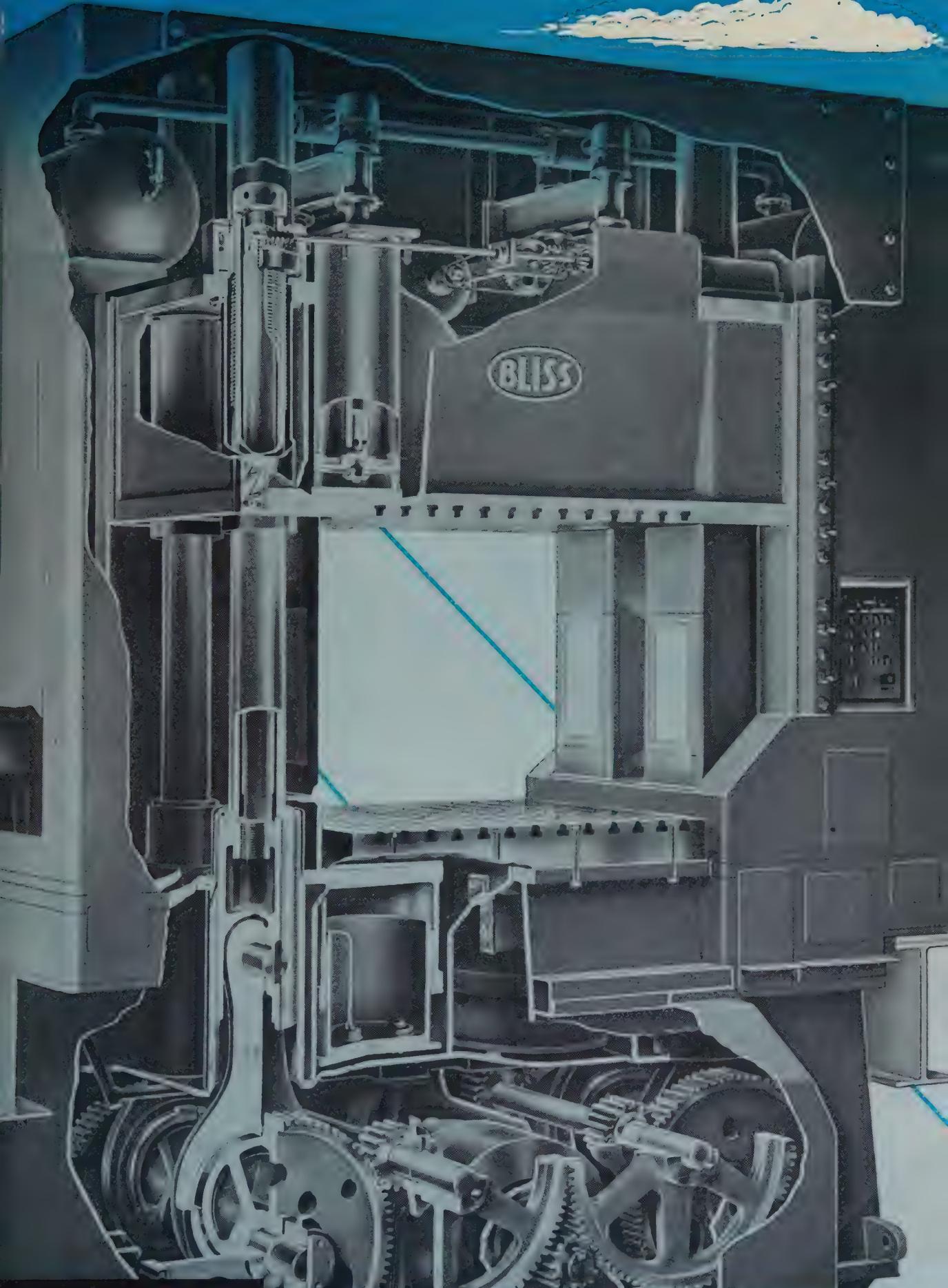
FOR MORE INFORMATION, WRITE

E. W. BLISS COMPANY, Canton, Ohio
Presses, Rolling Mills, Special Machinery

U. S. Plants in Canton, Cleveland, Salem and Toledo, Ohio; Detroit and Hastings, Michigan; San Jose, Calif. Representatives in principal cities.

Beneath the sleek exteriors
are these new design features—

- Heavy frame construction—For a century, Bliss has been known for its emphasis on heavy frames. With big presses like these, Bliss' heavy sections and internal ribbing easily take quick shock loads in stride.
- Extra-long gibbing—slide works entirely within gibbs, even when adjustment is down. Motorized slide adjustment is self-braking, assures accurate positioning. Slide runs true at all times, meaning longer die life and greater accuracy.
- Integral gear and eccentric drive—its compactness allows gears to operate within the crown. No overhanging gear guards. And Bliss' design eliminates torsional deflection of main pin, minimizes distortions due to overloads.
- New automatic lubricating system—a recirculating type which has proved foolproof in service. Positive piston displacement method automatically lubricates every bearing surface at predetermined intervals. Electrical interlocks shut down press if a single feeder fails.
- Cool-running high speed clutch—Bliss' combination pneumatic friction clutch and brake is extremely fast—only a fraction of an inch needed between full engagement and brake. Self-aligning feature automatically compensates for wear. Clutch is also self-cooling.



BLISS
SINCE 1857

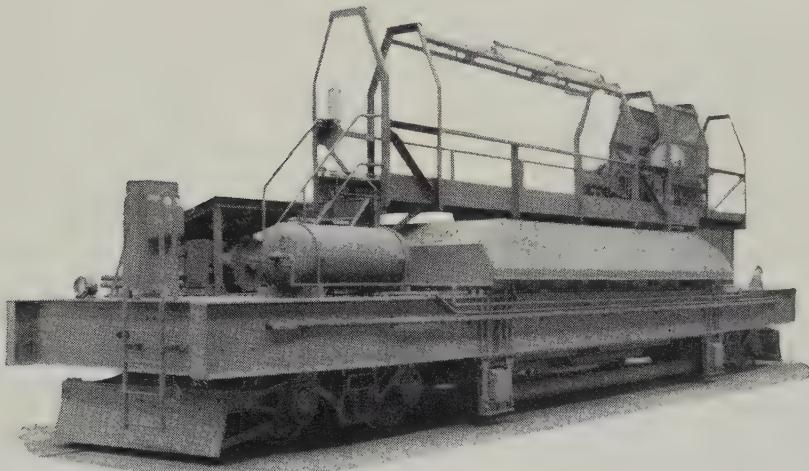
is more than a name...it's a guarantee

STOCK HOUSE OR HIGH LINE

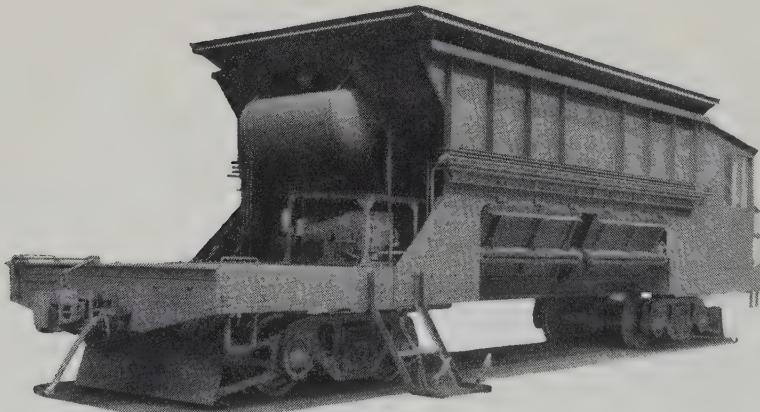
operators prefer the

DEPENDABILITY OF ATLAS CARS

These specially designed units are another example of the ruggedness of Atlas Cars. Their dependability helps maintain the most rigid furnace charging cycles.



40-TON SCALE CAR
Double Hopper Bottom Dump



75-TON ORE TRANSFER
Gable Bottom Double Side Dump



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CLEVELAND 10, OHIO, U. S. A.

LETTERS TO THE EDITORS

No Such Tables

Are tables available which give the machinability of A.I.S.I. series and AMS series steel, in both the annealed and heat-treated conditions (Rockwell C-20 to C-45, in intervals of 5 points)?

J. Weistner
assistant engineer
Quaker City Gear Works Inc.
Bethayres, Pa.

- To our knowledge, such tables are not available. We are forwarding the article, "It's Faster Than You Think" (Aug. 30, 1954, page 64). It includes an up-to-date table on cutting speed numbers for steel and cast iron which may be of value.—ED.

Plant Prognostication



Your article, "Better Plant Layout" (Apr. 18, page 93), was most interesting and informative. We feel that considerable benefit can be gained through greater circulation of this article in our plant. I would appreciate receiving three copies.

J. C. Kice
methods engineer
Arlington Plant
General Motors Corp.
Arlington, Tex.

Please send two copies of your excellent article . . .

K. C. Pyne
supervisor, plant engineering
Lehigh Structural Steel Co.
Allentown, Pa.

This third article in the Program for Management, 1955 series, was outstanding. Please forward three copies.

Christopher J. Reiley
industrial engineer
The Patent Button Co.
Waterbury, Conn.

- Sent.—ED.

Iron and Steel Research

I am writing a research paper on the iron and steel industry. Do you have any material on steel demand, future growth and sales in the industry or profits to be derived from steel making?

Harold J. Dolato
955 N. 14th St.
Milwaukee

- Being forwarded are: The 30th Annual Financial Analysis of the Steel Industry (insert in Apr. 11 issue); the Market Outlook of Mar. 28 (page 121); and "Coming: Another Wave of Steel Expansion" (Sept. 20, 1954, page 111).—ED.

Valuable Assistance

Last year this office received reprints of your 1953 Program for Management series (which were helpful to our management team). Inadvertently we failed to request reprints of the 1954 series. If any are left, may we have a set? We of the purchasing office and our friends in engineering and production would lose valuable assistance.

(Please turn to page 12)



Here's the inside story

of cost cutting
**ROCKRITE®
CYLINDER
TUBING**

The inside surface is entirely free of scoring, is so smooth and has such a low RMS rating it is ideal for pneumatic cylinders. Just cut it in desired lengths and use as is for soft-packing pistons. Save the cost of inside machining or honing. And save too by complete standardization of parts that Rockrite close tolerances make possible.



For details
ask for
Bulletin R7.



TUBE REDUCING CORP.

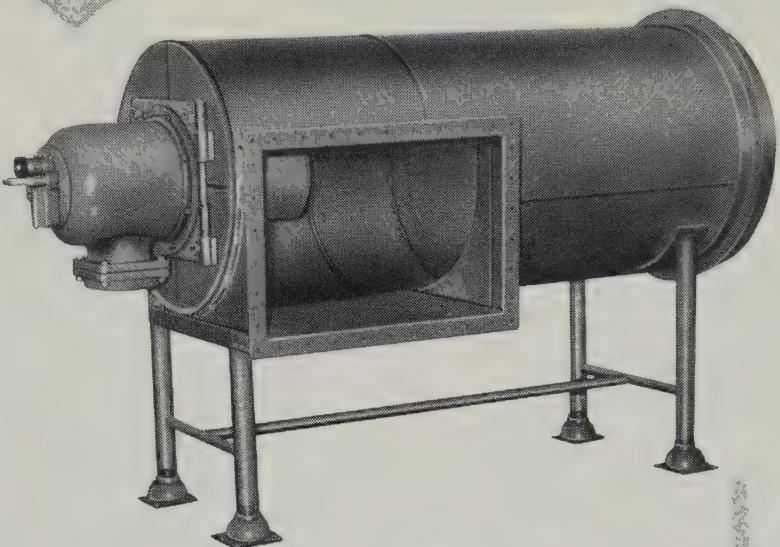
WALLINGTON, NEW JERSEY
SUBSIDIARY OF AMERICAN METAL PRODUCTS CO.

JOSEPH T. RYERSON & SON, INC., NATIONAL WAREHOUSE DISTRIBUTORS



LETTERS

THERMAL TYPE CA DIRECT FIRED AIR HEATERS



COMPACT...EASILY INSTALLED

Readily fitted to ovens, kilns, spray dryers, etc., the THERMAL Type CA Air Heater is an ideal source of heat where products of combustion may be mixed with the air. Oil, gas or combination firing is available without change in heater construction.

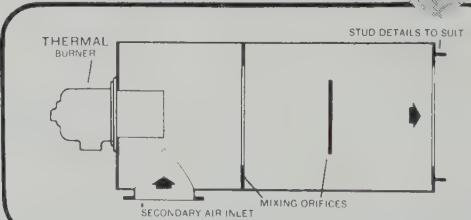
NO REFRACTORY REQUIRED...

The THERMAL High Velocity Burner built into the heater permits combustion to be substantially completed within the burner itself. Thus the heater is basically a mixing chamber wherein the products of combustion are mixed with the air being heated. Refractory is not normally used. Successful applications have been made ranging from under 200,000 BTU/hr. to over 20,000,000 BTU/hr. and at all pressure levels.

FOR DETAILED INFORMATION WRITE FOR BULLETIN 104

UNITIZED CONSTRUCTION

Initial cost and upkeep is kept at a minimum through the use of all welded, all metal construction. The CA Air Heaters are normally supplied as complete "package" installations.



OTHER THERMAL PRODUCTS & SERVICES



Gas, Oil & Combination Gas-Oil Burners •
Heat Exchangers • Submerged Combustion •
Combustion & Heat Transfer Engineering

T H E R M A L
Thermal Research & Engineering Corp.

CONSHOHOCKEN • PENNSYLVANIA
REPRESENTATIVES IN PRINCIPAL CITIES

(Concluded from page 10)
sistance if deprived of our weekly copy
of STEEL.

Andrew J. Wood
contracting officer
Purchasing Branch, MSO
Red River Arsenal
Texarkana, Tex

• Sent.—ED.

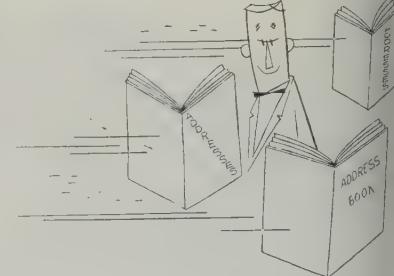
Aid to Engineers

The article, "Opportunity Knocks in the Micron Range" (Apr. 11, page 108) is outstanding. It helps our engineer evaluate fabricating methods and properties. We would appreciate three reprints.

J. F. Kuhns
project director
Mills, Petticord & Mills and Associates
Washington

• Sent.—ED.

May I Have the Source?



You mention diamond mounting in the Technical Outlook column of Apr. 4 (page 77). I would like more details on this. May I have the source of the information?

W. F. Parsons
technical correspondent
Product Service Dept., A.E.B.I.
Carborundum Co.
Niagara Falls, N. Y.

• Write H. Tracy Hall, Research Laboratory, General Electric Co., Schenectady, N. Y.—ED.

Who has developed the ultrasonic attenuation analyzer described in the article, "Fatigue Draws Its Picture" (Apr. 18, page 127)? It might be of some use to us.

M. L. Frey
assistant to gen. works mgmt.
Tractor Divisive
Allis-Chalmers Mfg. Co.
Milwaukee

• The producer is Vibro-Ceramics Corp., a Gulton Industries affiliate, Metuchen, N. J.—ED.

I am interested in obtaining data on the porcelainized aluminum name plates being used by aircraft manufacturers. This is described in the Technical Outlook column of Apr. 4 (page 77).

Carl Halphen
vice presidens
Electro-Chemical Engraving Co., Inc.
New York

• Contact the California Metal Engraving Co., 6904 E. Slauson Ave., Los Angeles 22, Calif.—ED.

In the Apr. 18 Technical Outlook column (page 103) is an item on three-dimensional stress analysis (making possible to determine stresses deep in the interior of a body). Where can I get further information?

Jos. L. Gillman
consulting engineer
412 Albee Blvd.
Washington

• Write Miss Mildred Wyatt, Technological Center, Illinois Institute of Technology, 35 W. 33rd St., Chicago 16, Ill.—ED.

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Extra Quality... and
AMERICAN PHILLIPS
Quality pays back
its cost... many
times
over

Customer-loyalty is mostly good business sense. And that's why so many makers of quality merchandise stay with American Phillips year in and year out . . . why a furniture-builder and an organ-maker, for instance, have been standardized on this modern fastening method ever since American first introduced the Phillips Screw to industry. Here's the point: If old-fashioned slotted screws *really* cost less to use, and fulfilled quality standards, then these cost-minded manufacturers would have returned to them long since. But they have found that American Phillips economies . . . easier handling, faster driving, better fastenings, no spoilage or accidents . . . pay back the cost of American Phillips Screws *with interest*, over and over again. And an economy-test on your operation may well uncover opportunities for savings in assemblies as much as 50% over present methods. American engineers are ready to go into this with you . . . *any time you say.*

X marks the spot . . . the mark of extra quality

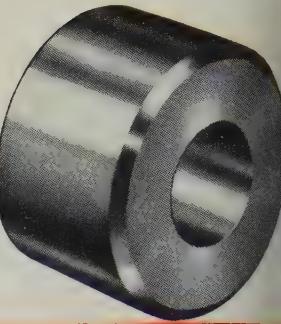
AMERICAN SCREW CO.

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Plants at Willimantic, Conn. and at Norristown, Pa.
Warehouse and office at Chicago
Office, Detroit, Michigan



Will your next "Automatics" meet the requirements?



You get demonstration
of your work and complete
job development record

Cone submits samples
of your work

Cone makes
recommendations

You send print
to Cone

The use of carbide setups on Conomatics is moving along so rapidly that it is just good business to make very certain that your next multiple spindle automatics will meet 100% carbide tool requirements.

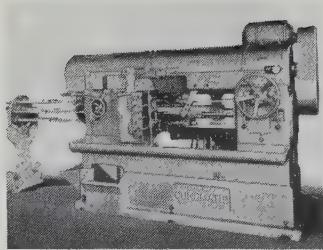
You can be certain by seeing a demonstration of the machine of your choice equipped with carbide tools on your own work. That is, you can if it is a Conomatic.

Without charge, except for bar stock and tools, you can be an on-the-job witness to a carbide test run of your own work on a Conomatic.

And whether you are ready for carbide now, or will be later, you will want to consider a machine that is superior for either carbide or hss.

DATA FOR COMPARISON

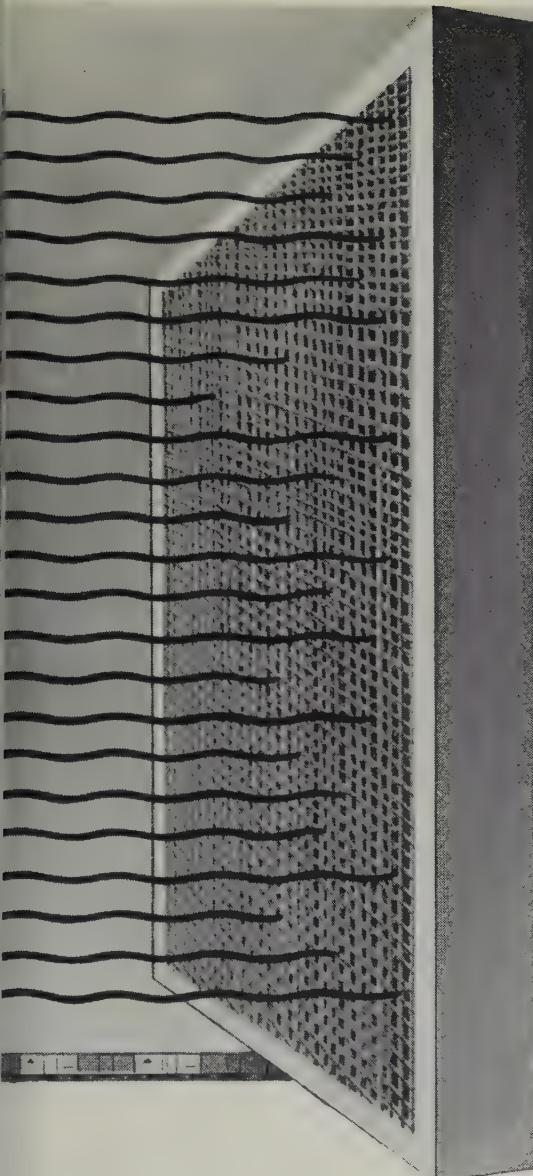
Part	Roll	Depth Hole.....	1 $\frac{1}{32}$ "
Machine..	1 $\frac{1}{8}$ " Six Spindle Conomatic	Work Dia.....	1 $\frac{1}{16}$ "
Material.....	.8620 HR	Drill Dia.....	1 $\frac{1}{16}$ "
Tools.....	100% Carbide Tipped	RPM.....	1216 Work Spindle 1040 Op. Drill 2256 Total Eff'd.
Stock Size.....	1 $\frac{1}{8}$ "	Time.....	10.7 Seconds
Length.....	1 $\frac{1}{32}$ "		



Conomatic

CONE AUTOMATIC MACHINE COMPANY, INC., WINDSOR, VT., U.S.A.

For
particulars
send for
"Four Steps With Cone"



HOW SPECIAL

WIRE CLOTH

*helps big engines
breathe easier,
work better*



Keeping harmful grit and dirt out of the lungs of big engines, like locomotive diesels, is no small problem. Determined to do the job better than ever before, a leading filter manufacturer turned to the *Reynolds Wire Division* of National-Standard for a special wire cloth that would trap all the dirt and still let such engines breathe the terrific volume of air they need.

A simple assignment this, for it took months of concentrated development work—not only to develop the kind of wire cloth that would do the job, but also to find out how best to produce it. It had to be slit into narrow

widths, with special lock wires to prevent raveling. It had to withstand a patented method of severe forming and crimping without compacting. And despite the special construction and narrow slitting, it had to be furnished in extra large continuous rolls. All were tough problems to lick!

The ability to lick a tough problem in wire cloth is one thing. The willingness to do it is quite another. You get both at Reynolds Wire. But, problem or no problem, short orders or large volume production, you too will find it pays to turn to Reynolds. Try us and see.



NATIONAL-STANDARD COMPANY • NILES, MICHIGAN
Tire Wire, Stainless, Fabricated Braids and Tape

ATHENIA STEEL DIVISION • CLIFTON, N. J.
Flat, High Carbon, Cold Rolled Spring Steel

REYNOLDS WIRE DIVISION • DIXON, ILLINOIS
Industrial Wire Cloth

WAGNER LITHO MACHINERY DIVISION • JERSEY CITY, N. J.
Special Machinery for Metal Decorating

WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.
Round and Shaped Steel Wire, Small Sizes

making a
**MARKED
 IMPROVEMENT**
 in PAYROLL and
 PRODUCTION TAGS



Stocking huge pre-printed inventories of piecework, production and payroll tags — then hand stamping or writing the entries — is about as costly and tedious a method as you could find. Markem's 32A machine shown does the job far faster, cheaper and easier. Whatever you wish to mark — product, part or package — most likely there's a Markem machine, type and ink specially suited to the job. Whether you have a real marking "problem" — or would just like to improve on your present method — we'd like to talk with you. Write us now. Markem Machine Co., Keene 30, New Hampshire.

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Published Every Monday by

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NBP



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world's tallest building.

EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing...that this spring steel is absolutely unexcelled for dimensional and mechanical uniformity...for speeding production and cutting down rejects.

You always *pay* for the best when you buy flat spring steel...make sure you *get* it by specifying Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.



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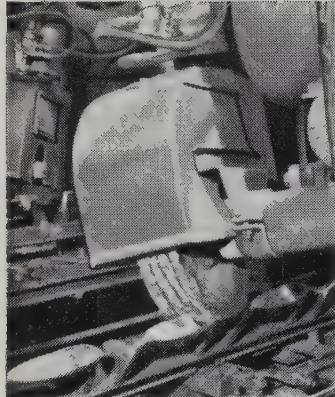
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ALWAYS FINISHES FIRST

-and saves on compound—
it's "metered"!

Liquimatic

the perfect liquid compound
for all metal finishing

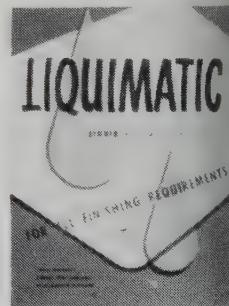


How much of the compound in your buffing room is wasted...in the nubbin pile, or in "over-heading" buffs? There's a way to "meter" the compound you use—the Liquimatic way. An electrically timed system in the Liquimatic Process feeds the exact amount of liquid compound for the exact cut you need. While compound is being saved, buffs are being saved too...continual lubrication extends buff life up to 400%.

These two cost-saving advantages

alone soon pay for a complete Liquimatic Application System. But there are still other ways Liquimatic will help you cut costs. No hand application, and no changing of bars will effect substantial downtime savings for you...and Liquimatic's ease of cleaning means even further economies. Now—when production must be upped, and costs lowered—profit from Liquimatic—over and over again.

Check the other features of Liquimatic...then write today for your free copy of Liquimatic's big, new folder that tells the whole cost-saving story of Liquimatic in your buffing room.



Liquimatic ...

gives more buff mileage

These additional Liquimatic features mean real savings in terms of time, money, safety—

- longer buff life
- completely automatic
- fast cutting
- easy cleaning
- non-settling
- high flash point
- long storage life
- sprayable viscosity
- adhesive slow-wearing buff face

PLATEMANSHIP

HANSON-VAN WINKLE-MUNNING COMPANY

Main Office and Plant, Matawan, New Jersey

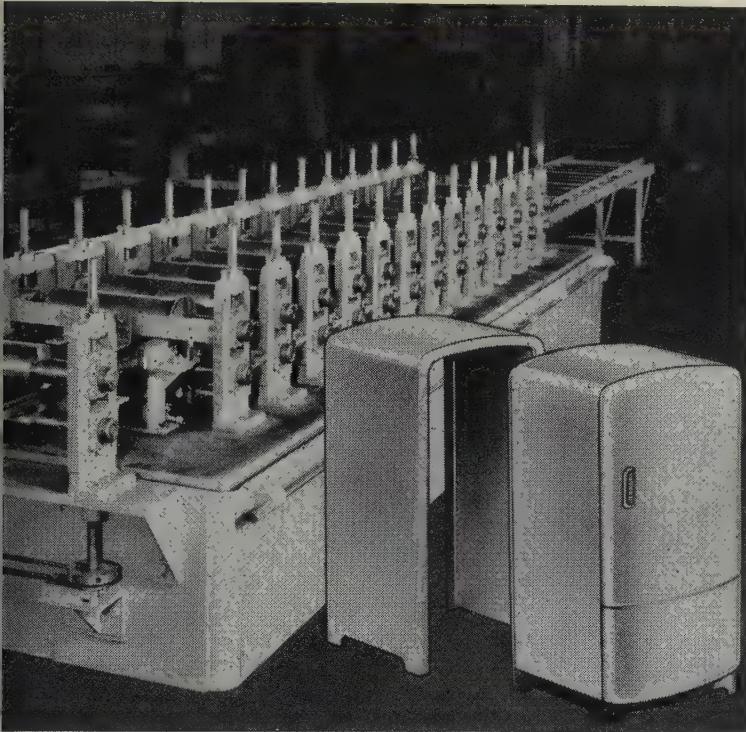
J. C. Miller Division, Office and Plant, Grand Rapids, Mich.

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H-VW-M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES



Refrigerator shells now being made almost exclusively in Yoder Cold Roll Forming machines, from flat sheets forming sides and top.



In autos, buses and railroad coaches, cold roll formed mouldings and panels serve many purposes, both inside and out.



Cold Roll Formed components enter extensively into this Stransteel home and many other factory-built structures.

1001 things
now being done
by

COLD-ROLL-FORMING

Especially if your business has grown from modest beginnings to sizable volume, it is time to take a fresh look at the economic and other possibilities of cold roll forming.

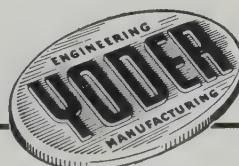
The modern cry for streamlined design and automation is admirably met by Yoder Cold Roll Forming equipment. Things are being done today by this process which yesterday were not thought possible. Take refrigerator cabinets, for example: Nearly all of them are now formed in one passage through a Yoder machine from a flat sheet which is then transversely bent, as illustrated, to make the top and the sides.

Likewise in autos, buses and railroad coaches, roll-formed shapes are extensively used both inside and outside, for combination decorative and functional mouldings and panels.

Homes, storage and warehouses, industrial, retail and wholesale structures are most economically fabricated and erected largely from cold roll formed shapes.

The above are but a few of the many end uses for roll formed sections which are illustrated in the Yoder C.R.F. Book—with explanatory text on the machines, the art, end uses and economics of cold roll forming. A copy is yours for the asking.

THE YODER COMPANY
5502 Walworth Ave., Cleveland 2, Ohio

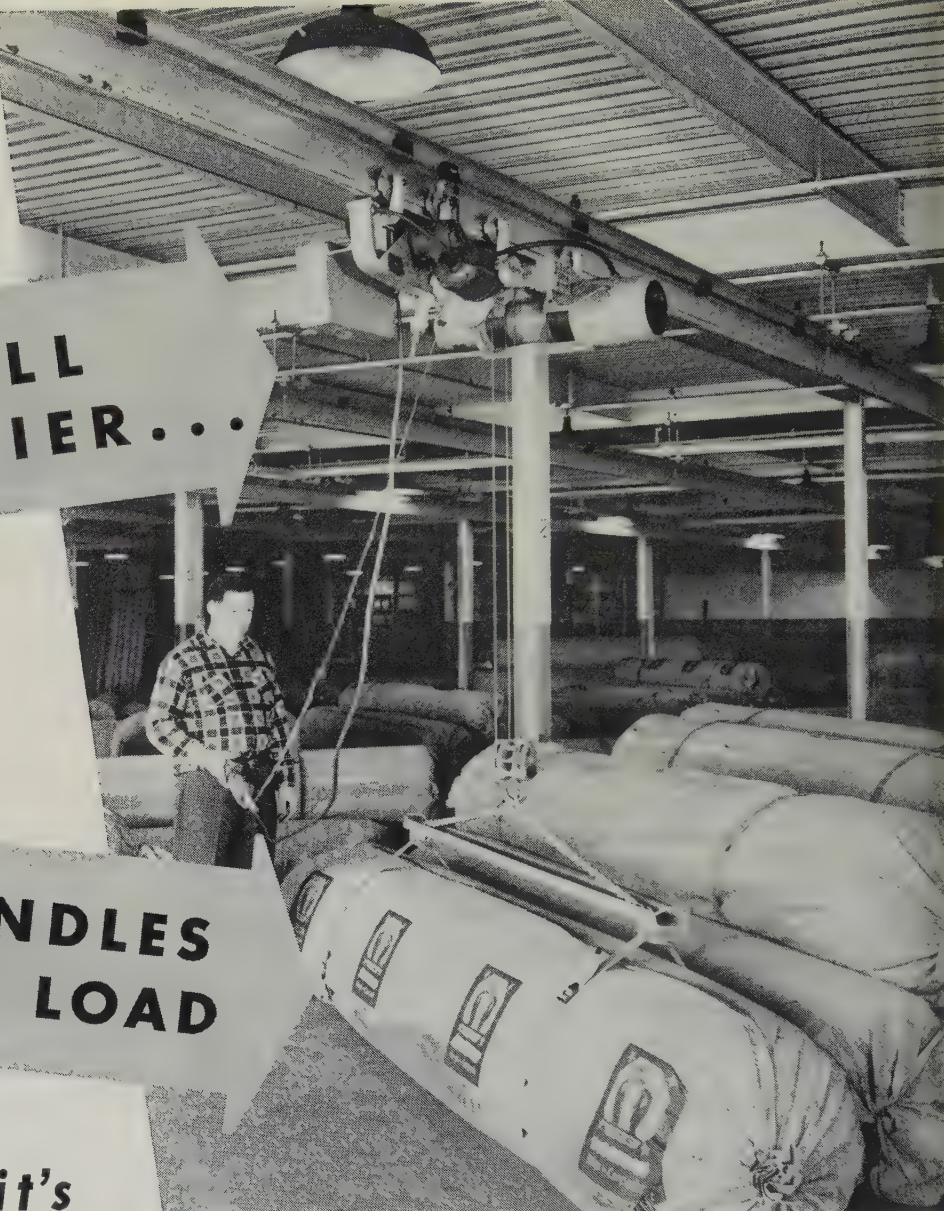


- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS — cold forming and welding

**SMALL
CARRIER...**

**HANDLES
BIG LOAD**

...naturally it's



AMERICAN MONORAIL

This American MonoRail Monotractor unit, recently installed in a rug and carpet warehouse, dispatches hard to handle, big bulky loads over a wide area. Fully automatic, with finger-tip control, with a hoist capacity of 1,000 pounds, this installation is **SAVING 200 MAN HOURS PER WEEK.**

This is another of the many examples of American MonoRail engineering for low-cost, efficient overhead handling. Let your American MonoRail representative explain the versatility, low cost and low maintenance of American MonoRail equipment. Consultation in connection with any handling problem is available without obligation.



AMERICAN

OVERHEAD
HANDLING
EQUIPMENT

MonoRail COMPANY

13102 ATHENS AVENUE • CLEVELAND 7, OHIO

[IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.]

Announcing KENNAMETAL* GRADE

K21

CODE	CHIP REMOVAL	WEAR APPLICATIONS
C-1	Roughing Cuts—Cast iron and non-ferrous materials.	
C-2	General Purpose—Steel	
C-3	Light Finishing—Steel	
C-4	Precision Boring—Cast iron and non-ferrous materials.	
C-5	Roughing Cuts — Steel	
C-6	General Purpose—Steel	
C-7	Finishing Cuts — Steel	
C-8	Precision Boring — Steel	
WEAR APPLICATIONS		
C-9	Wear Surface—No Shock	

case K21

the new, superior General Purpose steel-cutting carbide

... the new Kennametal General Purpose steel-cutting grade is out-performing all other grades in its field, even K2S, the leader of all General Purpose grades in the carbide industry for over a decade. Its superior performance is due to high edge strength, combined with superior wear qualities and resistance to cratering. K21 was created to help get highest productivity from today's high-speed machines, yet, due to its range, it does an excellent job on older, slower-speed machines.

Naturally, K21 has been thoroughly tested. It has demonstrated great versatility on planing, turning,

boring, plunging, and interrupted cutting ... on such materials as forgings, sandy castings, centrifugal castings, plate, bar stock, and weldments.

K21 simplifies the problem of grade selection since it performs in all three groups—general steel-cutting, heavy roughing, and finishing. It is ideal for machining the newer high tensile strength steels, has high resistance to thermal shock, and is less susceptible to grinding cracks.

Why not try Kennametal Grade K21 now! It is available from stock in the most popular blanks, tools and inserts. Order today. KENNAMETAL INC., Latrobe, Pennsylvania.

K21 OFFERS

- Superior Wear Qualities
- Exceptionally High Edge Strength
- High Resistance to Thermal Shock

K21 is designed for cutting stainless steels, nickel steels, heat-resistant alloys, and high tensile alloy steels.

*Registered Trademark

5580



INDUSTRY AND
KENNAMETAL
...Partners in Progress



Win \$500 FIRST PRIZE

enter the 1955

GRAY IRON REDESIGN CONTEST

2ND PRIZE \$250

3RD PRIZE \$100

Make your redesign ideas pay off in cash! You are eligible if you have redesigned a product or part for production in gray iron which economically and efficiently replaced a competitive material. Regardless of how simple or complex your entry may be, you have a good chance of winning.

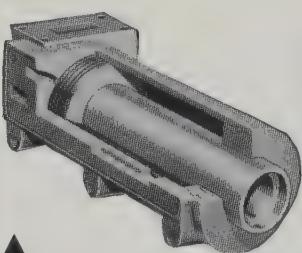
FOLLOW THESE EASY CONTEST RULES

1. Select the best example of products or parts that you have redesigned for production in gray iron.
2. Give all facts leading up to your redesign . . . why you thought of gray iron . . . how much was saved in labor and/or material costs . . . how much efficiency was gained and any other factors leading to your decision.
3. Submit an 8" x 10" glossy photo of the gray iron casting with your entry. If possible, also submit a similar photo of the original design.
4. Your entry must be in the mail by July 1, 1955 the contest closing date. Address: Redesign Contest, Gray Iron Founders' Society, Inc., National City-E. 6th Bldg., Cleveland 14, Ohio.
5. Contest is open to all persons engaged in the metal-working trades . . . entries may be made jointly by two or more individuals. Awards will be made at the 27th annual meeting of the Society in Milwaukee, Oct. 21, 1955.

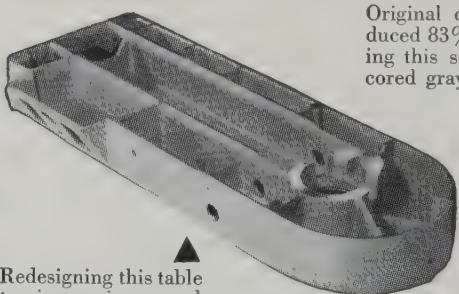
These examples of previous award winners show how easy it is to be a winner yourself . . .



*Make it better
with Gray Iron*

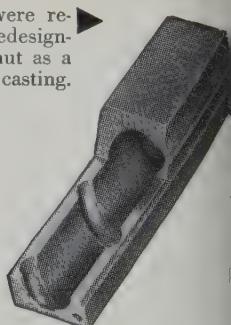


▲
22 parts were eliminated when the fabricated design of this hydraulic circuit was redesigned in gray iron.

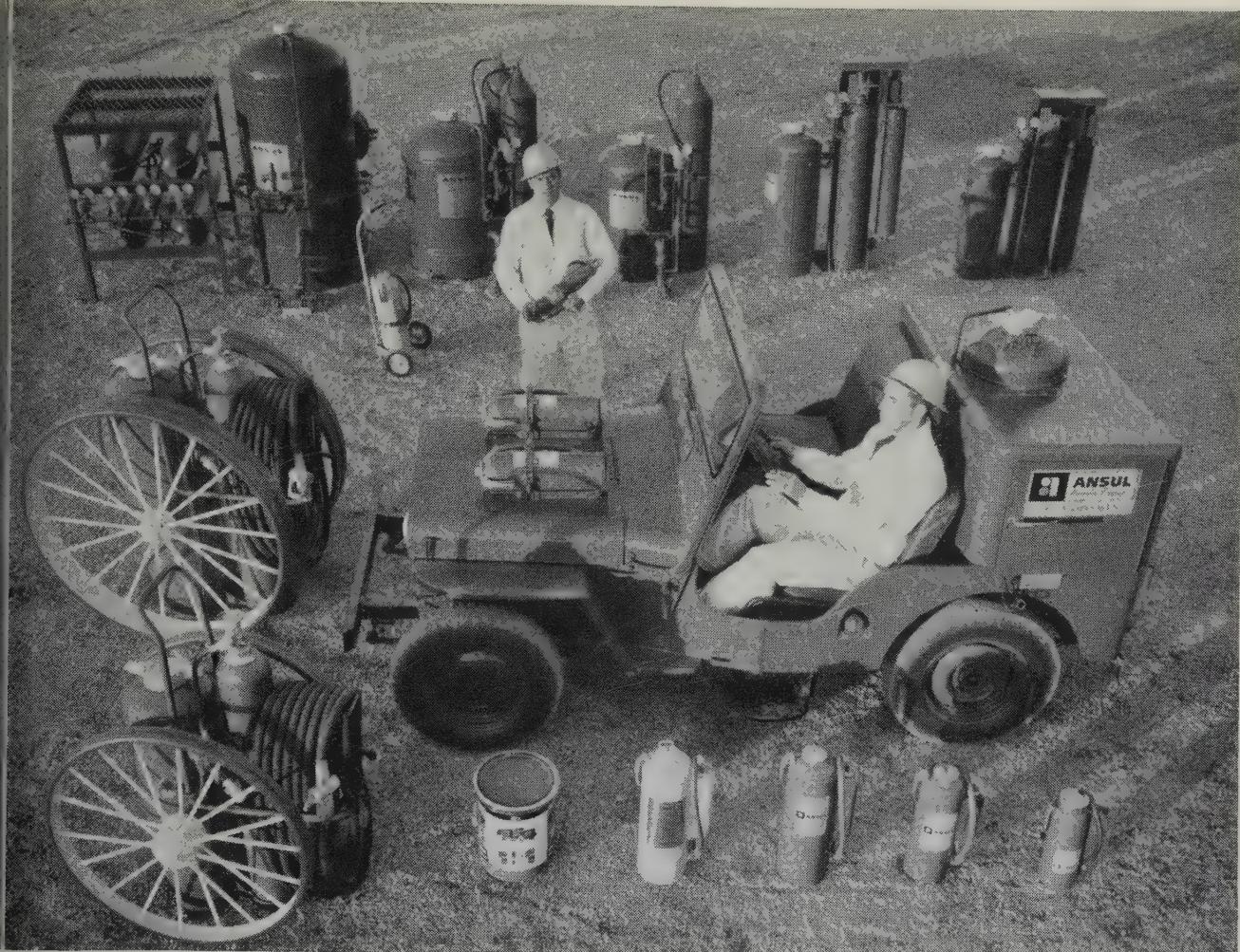


▲
Redesigning this screw nut as a cored gray iron casting saved 83% in cost.

Original costs were reduced 83% by redesigning this screw nut as a cored gray iron casting.



GRAY IRON FOUNDERS' SOCIETY



Ansul dry chemical fire equipment pictured above includes portable hand units, wheeled and stationary units for a jeep installation. Ansul also manufactures automatic

dry chemical piped systems, custom engineered for the hazard. Ansul equipment is listed and approved by Underwriters' and Factory Mutual Laboratories.

Only Ansul offers a Five Year Equipment Warranty

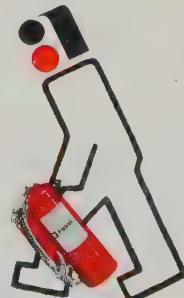
Your assurance of fast, dependable fire protection

For you, the buyer of fire equipment, Ansul's important 5 year warranty means many extra years of fast, dependable protection. It also means freedom from costly maintenance checks and repairs.

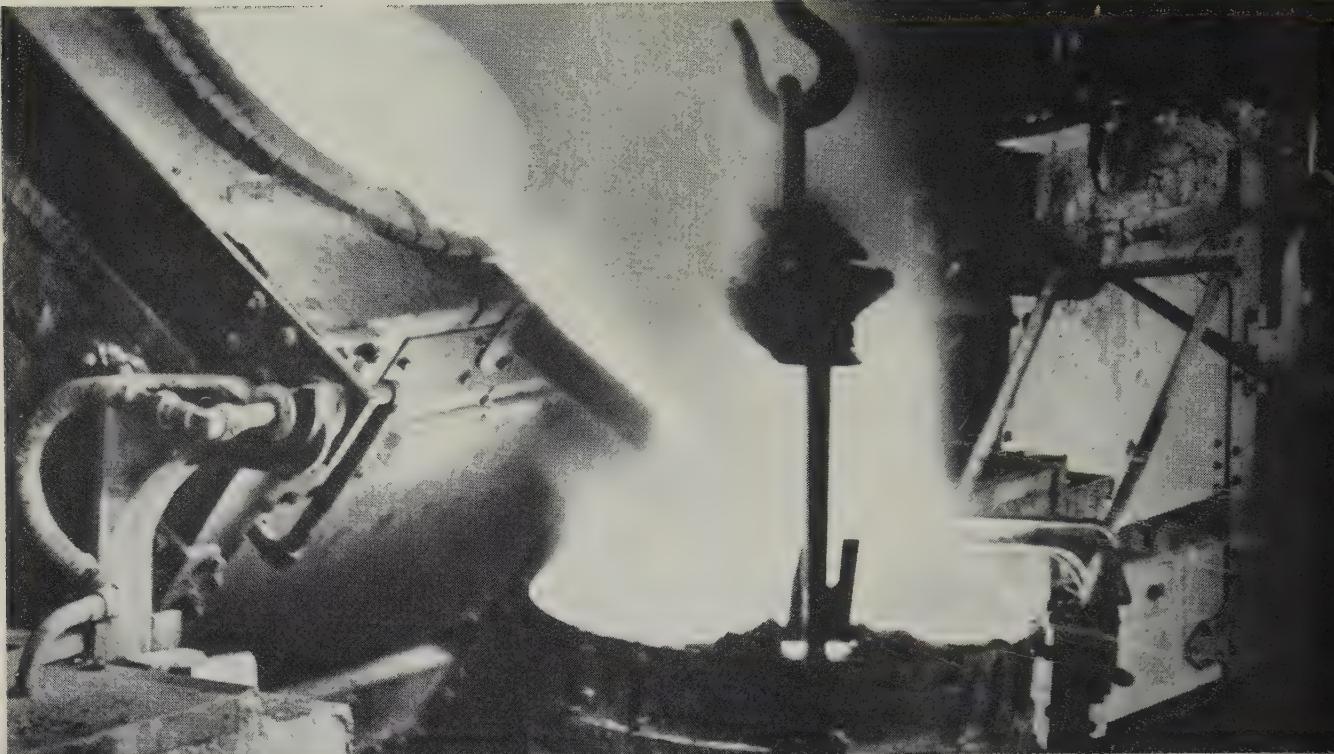
Special design and construction features make this warranty possible. Ansul's *weather-tight* construction keeps out moisture, resists corrosion. Patented nozzles deliver the right kind of stream for your hazard. A sealed pressure cartridge puts Ansul's "Plus Fifty" dry chemical to work immediately—no delay or lag. Finally, rugged construction makes it possible for Ansul equipment to give peak performance under the toughest operating conditions.

Call the Ansul Man!

Get in touch with your local Ansul man through the "yellow pages" or write ANSUL CHEMICAL COMPANY, Fire Equipment Division, Dept. F-133, Marinette, Wisconsin. Write Ansul for your copy of new Fire Equipment Catalog.



ANSUL



6 tons of steel melted and poured every $2\frac{1}{2}$ hours

SPEED . . . CONTROLLED QUALITY . . . ECONOMY —these advantages are enjoyed on every melt, ferrous or non-ferrous, in Ajax-Northrup induction furnaces. This furnace for example, turns out a sixteen charge of nickel alloy—precisely alloyed and virtually free of impurities—every $2\frac{1}{2}$ hours.

Ajax induction melting puts substantially all the heat in the charge proper. No power is wasted in superheating crucible or refractory, and little heat

escapes into the room. Speed of melting and electromagnetic stirring insure perfect alloys every time.

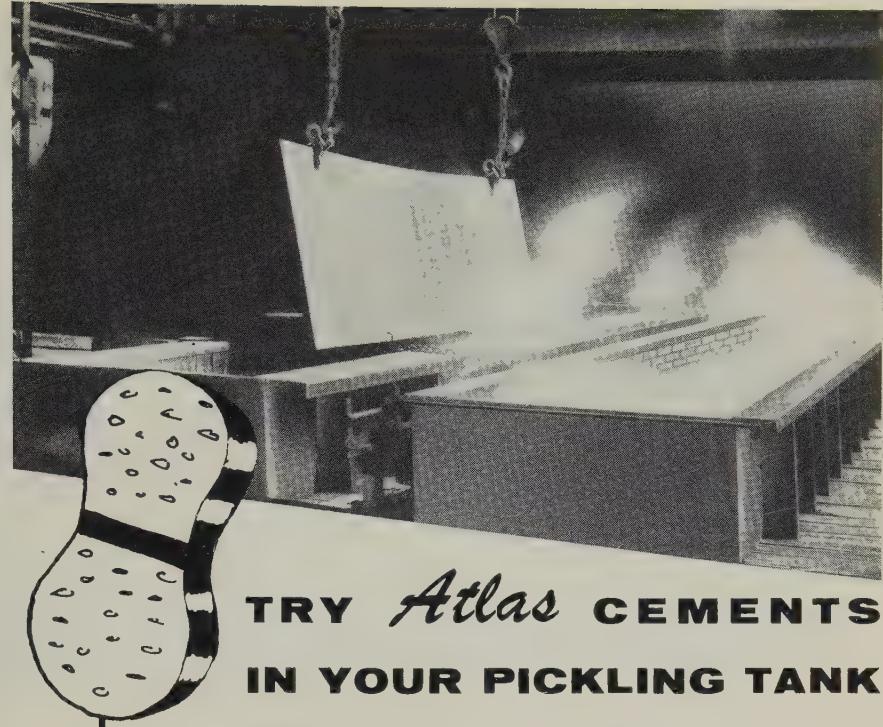
Ajax has been building induction furnaces for all metals since 1916. Installations capable of producing up to 20,000 pounds of metal per hour are in operation, and more and more foundries are switching to Ajax-Northrup melting as they discover its economy and advantages. Learn why in Bulletin 27-B, available upon request to Ajax Electrothermic Corporation, Trenton 5, New Jersey.

Associated Companies: Ajax Electric Company—Ajax Electric Furnace Co.—Ajax Engineering Corp.



CALENDAR OF MEETINGS

- 8-11, **Automotive Engine Rebuilders Association:** Annual meeting, Hotel Cleveland, Cleveland. Association's address: 419 N. Capitol Ave., Indianapolis 4, Ind. Executive vice president: R. G. Patterson.
- 8-11, **National Industrial Advertisers Association:** Annual meeting, Sheraton Park Hotel, Washington. Association's address: 376 Broadway, New York 19, N. Y. Executive secretary: Blaine G. Wiley.
- 9-11, **Metal Treating Institute:** Spring meeting, Ambassador hotel, Los Angeles. Institute's address: 271 North Ave., New Rochelle, N. Y. Executive secretary: C. E. Sperington.
- 10-12, **Metal Powder Association:** Annual meeting and exhibit, Bellevue-Stratford hotel, Philadelphia. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: Robert L. Ziegfeld.
- 11-13, **National Association of Sheet Metal Distributors:** Spring meeting, Hotel Cleveland, Cleveland. Association's address: 1900 Arch St., Philadelphia 3, Pa. Secretary: Thomas A. Fernley Jr.
- 15-18, **Copper & Brass Research Association:** Annual meeting, the Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: F. L. Riggan Sr.
- 15-18, **Industrial Heating Equipment Association Inc.:** Spring meeting, the Homestead, Hot Springs, Va. Association's address: 412 Fifth St. N.W., Washington, D. C. Executive vice president: Carl L. Ipsen.
- 16-17, **American Management Association:** Special conference on collective bargaining, Commodore hotel, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president-secretary: James O. Rice.
- 16-19, **American Mining Congress:** Coal convention and exposition, Cleveland Public Auditorium, Cleveland. Congress' address: 102 Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.
- 16-20, **Materials Handling Exposition & Conference:** International Amphitheatre, Chicago. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17, N. Y.
- 18-20, **Porcelain Enamel Institute:** Mid-year division conference, Edgewater Beach Hotel, Chicago. Institute's address: 1346 Connecticut Ave. N. W., Washington, D. C. Secretary: John C. Oliver.
- 19-20, **National Industrial Conference Board Inc.:** General session for all associations and 39th annual meeting, Waldorf-Astoria hotel, New York. Board's address: 47 Park Ave., New York 17, N. Y. Secretary: Herbert S. Briggs.
- 19-20, **Refractories Institute:** Annual meeting, Cavalier hotel, Virginia Beach, Va. Institute's address: First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: A. C. Newton.
- 22-24, **American Steel Warehouse Association:** Annual meeting, Hotel Statler, Boston. Association's address: 442 Terminal Tower, Cleveland 13, O. Secretary: Walter S. Doxsey.
- 23-25, **American Management Association:** General management conference, Roosevelt Hotel, New York. Association's address: 330 W. 42nd St., New York 36, N. Y. Vice president-secretary: James O. Rice.
- 23-25, **American Society for Quality Control:** Annual meeting and exhibit, Hotel Statler, New York. Society address: 50 Church St., New York 7, N. Y. Executive secretary: C. Eugene Fisher.
- 23-26, **Machinery Dealers National Association:** Annual convention, Netherland Plaza hotel, Cincinnati. Association's address: 1346 Connecticut Ave. N. W., Washington 6, D. C. Executive director: R. K. Vinson.
- 23-26, **National District Heating Association:** Annual meeting, Edgewater Beach Hotel, Chicago. Association's address: 827 N. Euclid Ave., Pittsburgh 6, Pa. Secretary-treasurer: John F. Collins Jr.



**TRY Atlas CEMENTS
IN YOUR PICKLING TANK
WITHOUT OBLIGATION...**

Next week, 3,000 plants in the United States will receive a folder offering an opportunity to test ATLAS CORROSION-PROOF CEMENTS in their pickling tanks. This test will consist of a sample briquette (shown above) joined with the proper Atlas cement. This briquette may be suspended in the pickling solution for any amount of time, and then examined for signs of wear or corrosion.

We, at Atlas, feel secure in suggesting this test, because we know that intensive research, controlled manufacture and experienced engineering make Atlas Corrosion-Proof Cements the best available.

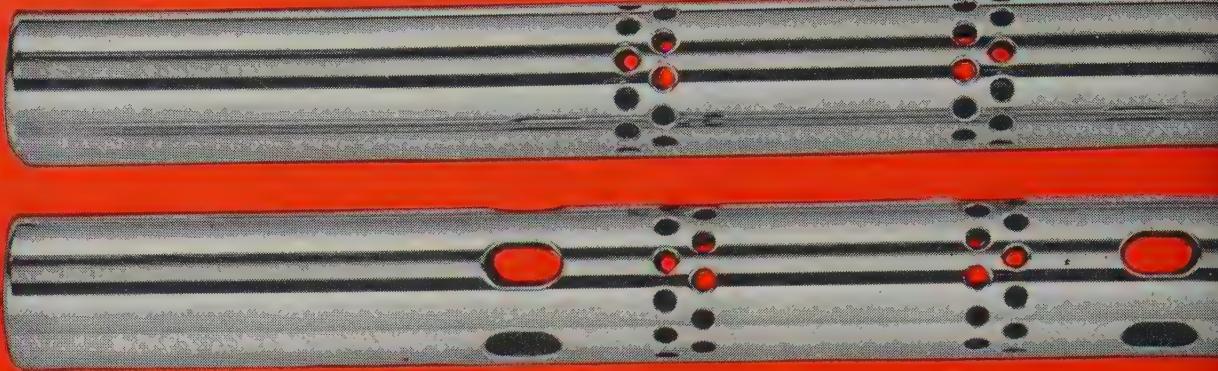
SEE FOR YOURSELF!

If you want to try the proper Atlas cement in your pickling tank, drop us a post card, tell us the type pickling solution you use, and we will send you a sample briquette without obligation.

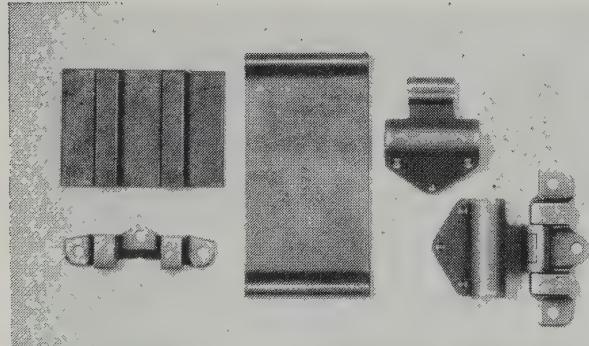


Sample briquette shown above measures approximately 1" x 3¹/₂" with 1" square center joined with Atlas Corrosion-Proof Cement.

ATLAS
MINERAL
PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA



Free-machining ENDURO®



MACHINING COSTS WERE REDUCED on these automobile door hinges when they were made from Republic Hot Rolled Carbon Special Sections. The component parts were cold formed by broaching. Tapping and drilling were the only other machining operations necessary. You can apply this economical method of mass producing steel parts where the section conforms to the predominating cross section of the part. Republic supplies hot rolled special sections in carbon, alloy and stainless steels.

REPUBLIC STEEL CORPORATION
3120 East 45th Street,
Cleveland 27, Ohio



Please send more information on:

- Free-Machining ENDURO
- Chain
- Hot Rolled Bars
- Lockers

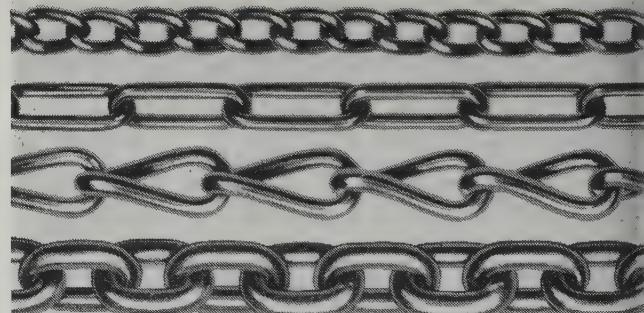
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Company _____

Address _____

City _____ Zone _____ State _____

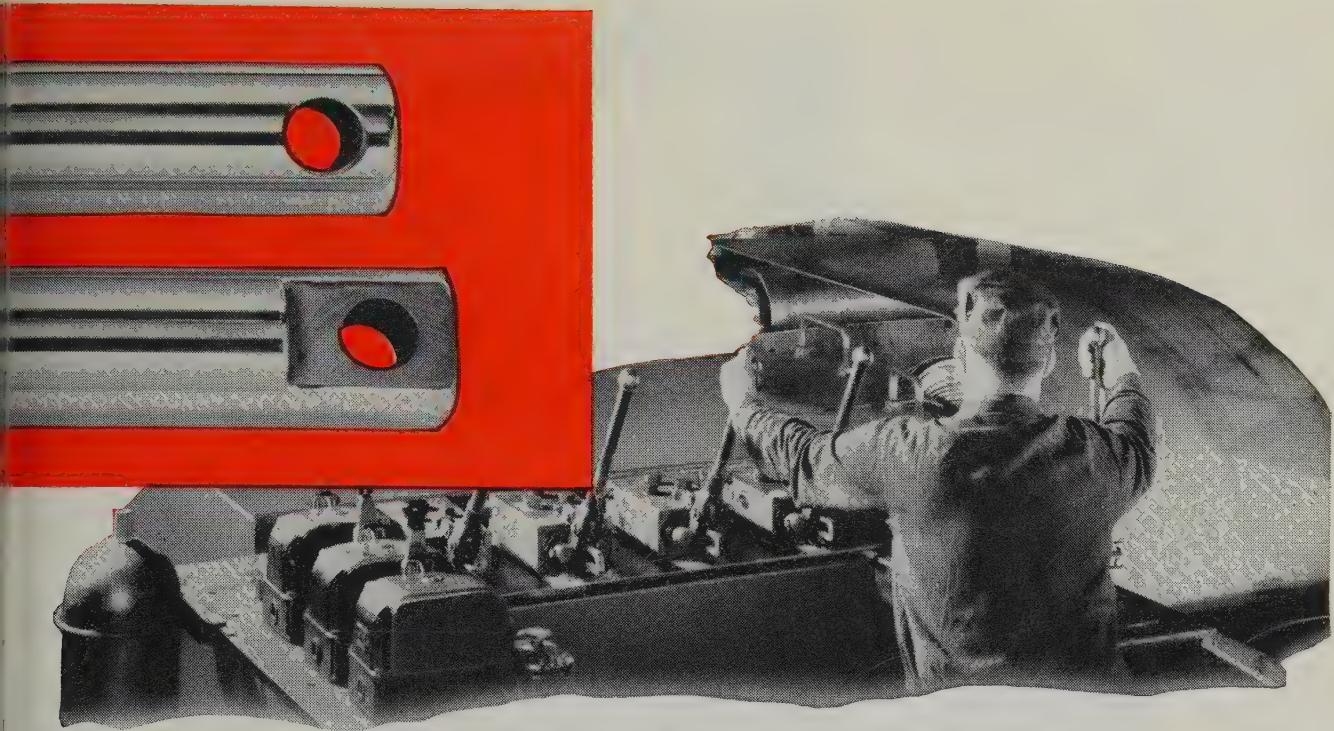
K-8124



FOR HOISTING, HOLDING, HAULING, TOWING, BUNDLING, you can count Republic Chain for greatest safety and dependability. Republic's Round Chain Division makes a complete line of welded and weldless chain for every industrial requirement—every type of fitting, attachment and accessory. Strategic location of Republic Chain plants and warehouses assures you prompt delivery.



THE WORLD'S LEADER IN LOCKERS, Republic's Berger Division offers a wide selection of standard steel lockers for every industrial use. Modern design assures full-time protection for personal property. Handles are tamper-proof and cannot be removed. Continuous door strikes along sides prevent insertion of tools for prying. Berger offers a complete locker planning, engineering and installation service.



Helps control costs on highly machined stainless parts

These stainless steel plungers for pneumatic and hydraulic control valves require 30 separate machining operations in producing them. Costs could be expensive. But the manufacturer controls them by using Free-Machining ENDURO Stainless Steel Bars.

Republic's Union Drawn Division produces cold drawn bars with a fine surface finish, close tolerance, accuracy of section, uniform soundness for fast, economical production on highly machined parts like these. Free-Machining ENDURO provides the added strength and corrosion-resistance of stainless steel. Two grades, A.I.S.I. 416 and 430-F, are fully 90%

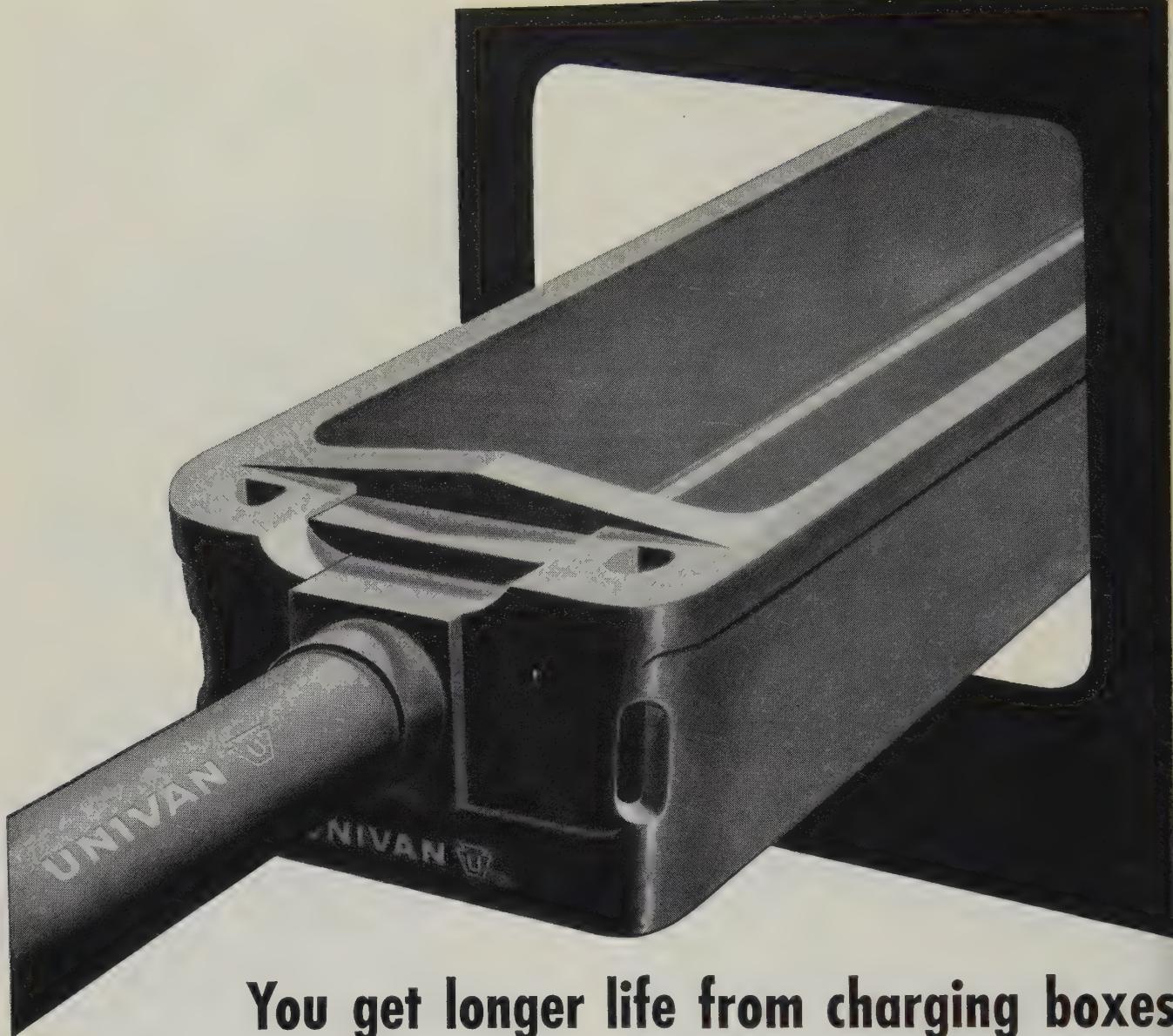
as machinable as Bessemer Screw Stock.

Thus, you can apply the high physical properties and corrosion resistance of stainless steel to your duplicate steel parts—and still maintain economical, automatic production—by switching to Free-Machining ENDURO.

Republic ENDURO Stainless Steel is available in all forms, including hot rolled bars, special sections and wire. Republic metallurgists and engineers will give you expert assistance on applications, processing and use. Specify ENDURO on your next order for stainless steel bars. Mail the coupon for more information.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products



You get longer life from charging boxes and peels cast in nickel UNIVAN steel

This special alloy steel has definite advantages over carbon steel. Due to its nickel content, for instance, UNIVAN has greater resistance to firecracking. And its high tensile strength provides greater resistance to torsional twist and shock.

So, if you're having trouble with excessive firecracking, distortion or breaking of your present castings, UNIVAN

castings may be the answer to your problem - whether they be charging boxes, peels, bearing covers, couplings and spindles, tongs and tong levers.

We'll be glad to give you more information about the performance of UNIVAN castings on the toughest jobs. Or, if you want prompt service, just send us your blueprints for a quotation.



BLAW-KNOX COMPANY

Union Steel Castings Division . Pittsburgh 1, Pennsylvania

UNION PRODUCTS: charging boxes • peels • bearing covers • slag pots • tongs and tong levers • universal couplings and spindles • gears and pinions • ingot cars • charging box cars • special UNIVAN and ARMOR steel castings



"Fuel for the Furnaces" by Agnes Potter Lowrie, famed artist daughter of a noted steelmaker. In this first of a specially commissioned fine arts series, Mrs. Lowrie finds beauty in weathered iron ore, creamy limestone, shaggy coke—basic elements so common most steelmen take them for granted.

The Fine Art of Steel Making

For 60 years the history of American industry has been the story of steel. You know the landmarks. The old, slow hand mill. Table trains with their lusty offspring, the continuous strip mill. And more recently, the speedy, almost automatic four-high mill.

During these 60 years every forward step in steel production has been paralleled by an equal advance in Ironsides Gear Shield lubricants. Heavy duty Gear Shield, once hand-paddled onto exposed gears, is now formulated with a solvent for quick spray application.

With increased use of encased gears, Gear Shield was produced in liquid form for pouring, pumping or timed-jet application. As pressure on production increased, Ironsides was among the leaders in developing extreme pressure lubricants.

Today, so widespread is the acceptance of Ironsides lubricants that other makers

often refer to their own products as "gear shields", even though Gear Shield is an Ironsides trade mark.

Ironsides is not mass production. We are the "custom tailors" of lubrication. Our special position is due in large part to our flexibility. We can—and do—formulate for individual applications and supply these formulas in any quantity from pails to tank cars.

We like tough problems, and we've solved a lot of them. For example, Palmoshield, replacement for palm oil and most important advance in lubrication since World War II.

If you have a special problem, we'd like to help you lick it. A letter or phone call will summon one of our research engineers. Address The Ironsides Company, Columbus 16, Ohio.



Ironsides



By the makers of Palmoshield • "the palm tree that grows in Ohio"

Bundy solves refrigeration problem with unique tubing strainer design

Read how Bundy Engineers work with designers to help make better products

As a designer, you undoubtedly know that Bundy is the leading manufacturer of small-diameter steel tubing. You've probably seen it specified many times.

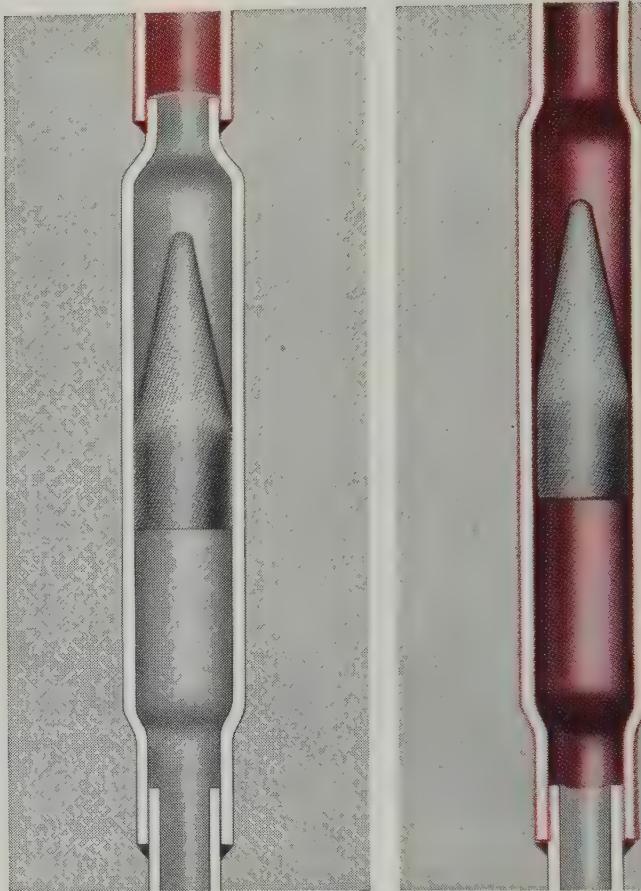
But, for *you*, there is more than manufacturing going on at the Bundy Tubing Company.

Shown at the right is a typical example of the help you can get at the design stage of your product. It is just one of hundreds of contributions which have been made by our engineering staff, in many widely diversified fields.

Take advantage of this unbeatable Bundy combination: expert, free engineering service plus genuine Bundyweld Tubing, the only tubing double-walled yet stronger; has high thermal conductivity, high bursting strength; takes easily to any fabricating operation. It is the safety standard of the refrigeration industry, *and is used in 95% of today's cars, in an average of 20 applications each.*

Let Bundy help you with that tubing design problem. Call, write, or wire us today:

BUNDY TUBING COMPANY
DETROIT 14, MICHIGAN



Problem: Because refrigeration systems can be quickly ruined by dirt particles which lodge in capillary tubes, most systems use a separate strainer assembly, as shown above. The two extra solder joints used to install the strainer assembly give rise to an even greater problem—leakage. Expensive hand assembly methods also frequently introduce dirt into the system.

Solution: New Bundy design actually makes strainer an integral part of condenser coil. The coil end is expanded to receive the strainer or filter and then swaged down to capillary size. This ingenious design eliminated one solder joint with its consequent risk of leakage or dirt inclusions; resulted in a cost savings of 50% to the customer.



Bundyweld starts as a single strip of copper-coated steel. Then it's



...continuously rolled twice around laterally into a tube of uniform thickness, and passed



through a furnace. Copper coating fuses with steel. Result . . .



Bundyweld, double-brazed through 360° of wall contact.



NOTE the exclusive Bundy-developed beveled edges, which afford a smoother joint, absence of bead, and less chance for any leakage.

BUNDYWELD TUBING®

DOUBLE-WALLED FROM A SINGLE STRIP



LIKE
FINDING
GOLD!

That's the way it's been—for foundries that have changed to CUT STEEL during the past year. For this amazing, new type abrasive is making money for these foundries, by doing an incredibly better job of cleaning and drastically reducing cleaning costs. You see, CUT STEEL is actually cut from high quality, alloy steel—which gives it properties and advantages possessed by no other abrasive. If you haven't tested CUT STEEL in your cleaning room—you should! It's like finding gold!

Grade "A" CUT STEEL sells for less than most cast steel shot!

Grade "B" CUT STEEL costs no more than most malleable shot!

Sooner or later, you too, will change to CUT STEEL!

CUT STEEL

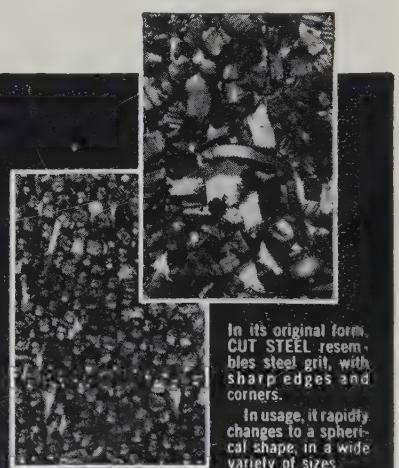
ABRASIVE

ANNEALSHOT and SUPER-ANNEALSHOT

PRODUCTS OF

METAL BLAST, INC.

872 EAST 67th STREET • CLEVELAND 3, OHIO



In its original form, CUT STEEL resembles steel grit, with sharp edges and corners.

In usage, it rapidly changes to a spherical shape, in a wide variety of sizes.

MAN • PRESIDENT • EXECUTIVE VICE PRESIDENT • PLANT MANA

RCH DI

RAL MANAGER • CHIEF ENGINEER • VICE PRESIDENT MANUFACTUR

LEVELS

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Contact all levels of management

• MILL SUPERINTENDENT

metalworking management...

Build the strength of STEEL
into your advertising program

Gone are the days of one-man management. Along with growth and the ever-increasing complexity of doing business, more and more key men have moved into the metalworking management area at *every* level. Today, decisions that affect you are in the hands of *The Management Group*.

To meet the needs of its readers, STEEL has been gearing its editorial reporting to the *management interests* of administrative, production, engineering and purchasing men.

Have you seen a copy of STEEL lately? Take a new look at its editorial approach and you'll see why your advertising in STEEL is selling *all levels* of metalworking management ... making your advertising dollars worth more by reaching *The Management Group!*

AL ENGINEERING



Edited for metalworking men at every management level . . .



A Penton Publication

Fallacies and Facts for Cemented Carbide Users

A few blunt—but needed—clarifications by the manufacturers of Carboloy Cemented Carbides

When you buy carbides, you're really buying *production ability*. You're buying what carbides will do in your shop in terms of metal removal.

If you're a tool engineer or designer, production foreman or machinist, you translate this into feeds, speeds, and depths of cut.

If you're in operating management, you also look for production ability, but you pinpoint it under the heading of greater machine efficiency, decreased downtime and lower tool inventories.

If you are a purchasing agent, your primary concern is getting the most for your money—but "most" in terms of production ability.

And, if you're in the top management group, your terms for production ability are: greater return on capital investment; decreased unit costs and increased gross margins.

The fallacy of overemphasizing the "Quickie Deal"

Be wary of the "quickie deal" involving price or discounts. You don't purchase with *production ability* in mind when you fall for these. Reason: while carbides look alike, *they don't perform alike*. And because of this fact, they can't be used interchangeably to bring the same on-the-job results. Their production ability varies—in some instances, tremendously.

The fallacy of the so-called "Industry Standard" Chart

Be wary, also, of the carbide salesman who shows a so-called "industry standard" carbide grade selection chart and says that each producer's grade within a category will perform equally well. They won't, because these are merely recommendation charts, *not "equivalent"* or "comparison" charts. Like most other products, carbides are made by different manufacturing processes and techniques, with varying degrees of engineering know-how and quality control exerted during processing. (Carboloy has one carbide engineer in its home office for every two salesmen in the field!)

The fallacy of using "Carboloy" to mean any brand of cemented carbide

And be wary of the salesman who tells you that his company makes "Carboloy." Unless he's one of our 70

field sales engineers or a representative of our 13 Authorized Distributors, his claim is in error. The name "Carboloy" is *our* registered trademark. It cannot be used synonymously with "cemented carbides" because it refers to one brand, and to one brand alone—Carboloy cemented carbides.

However, we do frequently receive complaints from people who say they have been sold "Carboloy," when they actually got another brand of cemented carbide that could not equal true Carboloy cemented carbide in *production ability*. Having our name used so freely by others is, we suspect, a problem that might come under the heading of "The Penalty of Leadership."

The facts about the need for advanced carbide engineering

Another facet of the responsibility that goes with leadership in the carbide industry, is the continuing engineering program carried on by our organization to prevent what might be termed a stagnant technology in the carbide field.

You, the user, impose ever-increasing demands on cemented carbides. And this advanced Carboloy development program is a major factor in keeping this vital phase of metallurgy ahead of the requirements you impose.

This emphasis on technical progress—resulting most recently in the new Carboloy Series 300 carbides—is another of the plus factors built into our product that the user can't always see.

The facts you can determine for yourself

We offer this suggestion—when you buy or use carbides, find out for yourself which carbide will give you the most production. If you care to, ask a Carboloy sales engineer to help you run the tests—but you set them up, in *your own shop*. Then compute your carbide cost based on *production ability*.

We have hundreds of in-plant case histories proving what our grades will do under any operating conditions. They show you how you get more for your carbide dollars when you specify Carboloy cemented carbides from your distributor or toolmaker. Write, or call, for assistance in getting the most out of your tooling dollars.

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

CARBOLLOY
DEPARTMENT OF GENERAL ELECTRIC COMPANY

11141 E. 8 Mile Blvd., Detroit 32, Michigan

Carboloy Created-Metals for Industrial Progress

VICTOR



Victor presents . . . 8 completely new cutting torches

*Quality...
Performance...
Durability...*

Models ST-1000, ST-1100, ST-1200 and ST-1300 Hand Cutting Torches . . . Model CA-1050 Hand Cutting Attachment . . . and Models MT-200 and MT-300 Machine Cutting Torches.

These completely new designs feature modern-clean-streamlined-sturdy lines . . . stainless steel preheat gas mixing chambers . . . heads of forged Everdur bronze or Monel . . . valve bodies and "Y's" solid die forged brass . . . hand-fitting oval shaped fluted brass handles . . . choice of cutting oxygen lever in four locations, top and bottom, front and back.

VICTOR Quality Cutting Torches will do a better job and stay on it under all kinds of difficult cutting operations.

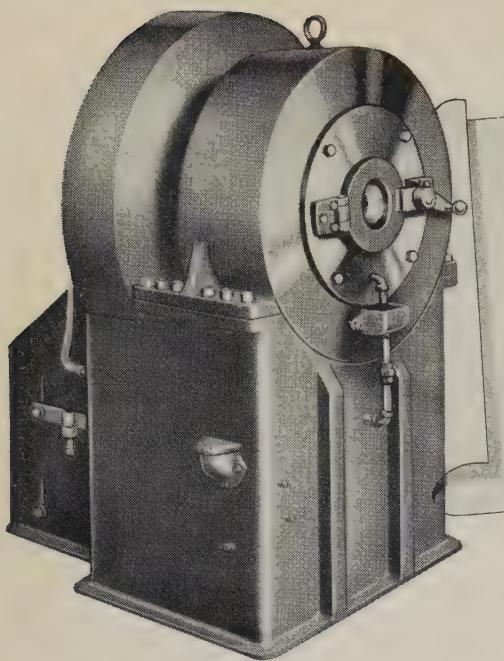
VICTOR
for welding

VICTOR EQUIPMENT COMPANY

Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings.

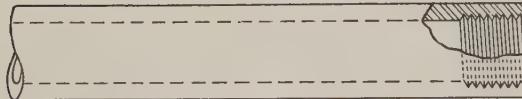
844 Folsom St.
San Francisco 7

3821 Santa Fe Avenue
Los Angeles 58

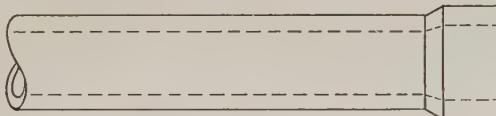


Swaging Success Stories

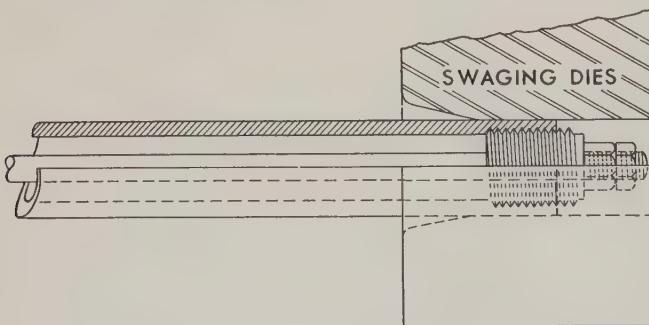
Forming Internal Threads ...by Swaging



The internal threads on this tube were formed quickly and economically by swaging over a mandrel.



First the end of the tube was expanded to receive a mandrel of the same diameter as the desired thread.



With the mandrel in place, the expanded section was then swaged to its original OD and the mandrel unscrewed. Result: Accurate internal threads with quality and finish of expensive machined threads. Uniformity from piece to piece was excellent.

Mandrel swaging can be used to form internal threads with practically all metals. It is particularly advantageous when working with aluminum and other metals that are difficult to machine.

**Swaging can be
your key to time
and cost savings!**

1. It's fast—often the fastest way to get a forming or finishing job done.
2. It's easy—can be done with unskilled labor.
3. It's economical—eliminates expensive machining operations without sacrificing quality.

Write for our informative booklet on swaging. It contains detailed descriptions of the Torrington Rotary Swagers. It also may carry the key to a "swaging success story" in your own plant.



THE TORRINGTON COMPANY

Swager Department

150 North Street, Torrington, Conn.
Makers of Torrington Needle Bearings

TORRINGTON **ROTARY
SWAGING** **MACHINES**

HOW DO YOU RATE AS A BUYER OF METAL STAMPINGS?

- Can further design modifications improve performance or appearance of your product?
- Can you cut costs by utilizing stock dies?
- Will a change in materials make parts wear longer, resist rust and corrosion, look better?
- Can parts be made lighter, stronger or more compact?
- Can you depend on deliveries to tie in with your production schedules?

can your metal stamped parts be improved or produced at greater profit* to you?

To tell you "how" and "why" it may be possible, The Crosby Company has just published an informative report: "Removing the Questionmarks from Metal Parts Procurement". In it, you will find specific ways in which Crosby can assist you in checking every major design and cost factor relating to metal stamped parts.

Much more than a production stamping

plant that merely "bids" on jobs, The Crosby Company makes a thorough study of every metal stamping inquiry. You receive an *Engineered Quote*. Often products are improved, money saved and profits increased as a direct result.

You can obtain the complete story without cost or obligation. Simply fill in and mail the coupon below.



THE CROSBY CO. 207 Pratt Street, Buffalo 4, N. Y.

Mail a copy of your report, "Removing the Questionmarks from Metal Parts Procurement" without cost or obligation.

Name Title

Company

Address

City Zone State



***REMOVE ALL DOUBT—
GET A CROSBY ENGINEERED QUOTE**

SALES OFFICES: Buffalo • Cleveland • Detroit • Chicago • New York • Philadelphia

What are your ring requirements?

Titanium?
Aluminum?
Stainless?
Ferrous?
Alloy?

Today American Welding supplies flash butt-welded rings to every U. S. jet engine manufacturer. Our modern plant is equipped to perform not only rough ring operations, such as forming, welding and sizing, but also whatever machining you may require.

In many cases where circular metal components have been made by some other method, flash butt-welding of bars, plate or special mill-rolled shapes has saved our customers thousands of dollars.

Our Industrial Products Division may be able to suggest similar economies for you. Why not write today — they will be glad to study your problem. (For a prompt analysis, include blueprints and specifications.)

THE AMERICAN WELDING & MANUFACTURING CO.
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AMERICAN WELDING



PRODUCTION FACILITIES CATALOG
Ask For Free Copy

Metalworking Outlook

May 9, 1955

Tax Cuts Coming?

The Committee for Economic Development urges planning now for federal tax reductions in fiscal 1957. Its Research & Policy Committee believes that first priority should be given to individual income tax reductions in all brackets. Next should come lower corporate rates and excise levies. It favors relatively greater reductions in upper personal bracket rates. The group believes that corporate income and excise rates should not be continued at present levels beyond Apr. 1, 1956, the date now scheduled for reduction. CED points out that with high employment and normal growth of the economy, present tax rates would yield substantially more revenue in fiscal 1957.

Defense Budget Aired

Legislative wheels started creaking last week to act upon the Defense department's budget request of \$34.6 billion in new money and more than \$46 billion in cash expenditures. Pentagon people will make much over the fact that they already have trimmed the request extensively, particularly for Air Force allotments. The Air Force originally wanted \$6.8 billion for new contracts, but that was reduced to \$6.1 billion.

No Hurry on Standby Controls

The White House appears in no hurry to get the Defense Production Act extended. It expires June 30. The administration is delaying action because of the touchy economic controls. Its reasoning: If a time can be picked when there is relative international calm, the request for standby authority to impose wage and price freeze orders wouldn't bring any major climb in prices.

Economists Shift on GAW

Economists who once were receptive to the United Auto Workers' type of guaranteed wage plan are withdrawing their support. The U.S. Chamber of Commerce quotes an opinion given by Harvard's Sumner H. Slichter that "the union's proposal is ill conceived." It also cites the comment by the Princeton professor, Richard A. Lester, who helped the UAW draw up its plan: "Academic experts seem in agreement that 'adequate' unemployment compensation under governmental auspices is preferable to any arrangement for private supplementation of state benefits. That is my position."

Monopoly Matters

Look for a Federal Trade Commission report on mergers within the next week or two. The study will outline chief causes of mergers and will point out that corrective legislation is needed to deal with some of the major problems . . . Attorney General Herbert Brownell caused alarm last week when he told the U.S. Chamber of Commerce that some industrial advisory

Metalworking Outlook

committees (IAC) "have participated in practices raising questions under the antitrust laws." IACs have as members businessmen who meet periodically to advise governmental agencies.

Fewer Companies

One effect of the 1954 recession: The business population dropped for the first time in a decade. At the beginning of this year, there were 4,182,000 firms, compared with 4,185,300 a year earlier. Since 1945, business population has increased each year, up to 1954, starting from 2,995,000 firms ten years ago.

Trouble in Transportation

Shaping up is a major hassle on transportation. That will delay congressional action on the President's transportation report. In this session of Congress, look for little if any action to implement the report with legislation. Lined up in general support of the report are the railroads. The major group opposing it: Truckers.

Coming: Atomic Merchant Ship

President Eisenhower's plans to send a new, atomic-powered merchant ship around the globe reveal that such a ship is in the works. It won't revolutionize our merchant marine immediately. Its propulsion unit probably will be built around a pressurized water reactor of the type that powers the *Nautilus*. Newport News Shipbuilding & Dry Dock Co. has a contract for an atomic Navy vessel and is running its own study of merchant ship applications. Bethlehem Steel Co.'s Quincy, Mass., yard is studying the application of nuclear power to commercial ships under a contract with the Atomic Energy Commission. Westinghouse Electric Corp., which built the *Nautilus* power plant, is to develop propulsion for a large Navy ship.

Straws in the Wind

Guided missiles and aircraft research and development will take one-third of the Defense department's requested \$1.4-billion military research appropriation in fiscal 1956 . . . Industrial demand for molybdenum in this country and abroad continues better than expected, says Arthur H. Bunker, president of Climax Molybdenum Co. . . . The House has voted to extend the Renegotiation Act, and the measure is being considered by the Senate Finance Committee.

This Week in Metalworking

The labor pot is coming to a boil (p. 45) . . . Prospects for lead are improving (p. 46) . . . Truck-trailer makers expect a near-record dollar volume in 1955 (p. 47) . . . Roger M. Blough and Clifford F. Hood take over the helm of U.S. Steel Corp. upon Benjamin Fairless' retirement (p. 48) . . . Progress report on the St. Lawrence Seaway (p. 50) . . . Construction booms builders hardware (p. 56).



"I need 6000 lbs. of structurals this afternoon--how about it?"

(A true story) It was 4:10 in the afternoon when the purchasing agent of a construction company called his desk man at Ryerson. "I need some structural channels in a hurry—12 inch, 25 pound . . . let's see, 12 pieces—that's 6000 lbs. Can I have it today? I'm really in a jam."

Ryerson's large stocks of ASTM-Spec A-7 structurals included just what was wanted. The steel was immediately cut and loaded, and at 4:35—just 25 minutes after the call—our truck rolled into the construction company's yard. They were then able to fabricate the

channels in their own shop and have them in place by 11 P. M.

"I thought of Ryerson because I've always had good service from you," the customer commented later. "I know I was asking a lot, but you really came through for me!"

Whether it's your day-to-day requirements, or help in an emergency—count on Ryerson. Here are the world's largest steel stocks—unparalleled facilities—and an organization eager and able to deliver. When you need steel—of whatever kind . . . call Ryerson.

RYERSON STEEL

Principal products in stock: bars, structurals, plates, sheets, tubing, alloy and stainless steel, re-bars, etc., also machinery and tools.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

for your
day-by-day requirements

1955

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1955

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May 9, 1955

Let's Explain Automation

Automation . . . no other word is so generally misunderstood.

To many a man in the street, automation has assumed the ominous proportions of a robot-like factory designed to devour raw materials at one end and spew out countless millions of finished products at the other—all without human guidance.

An article in the current issue of a popular magazine describes a transfer line for machining automobile engine blocks as carrying its own railroad within its bowels. Blocks ride from station to station "without a man to help."

To labor, automation is a device to rob men of jobs. Labor says the guaranteed employment plan "will insure that automation is not introduced in irresponsible ways which produce hardship and suffering for many thousands of workers."

To many in industry, automation still is associated with such awe-inspiring terms as cybernetics, servomechanisms and feedback principles. It is glowingly described as marking the dawn of a new era—the second industrial revolution.

There's nothing mysterious or frightening about automation. During World War II, our creative energies were focused on the development of improved weapons. We paid less attention to the machines that made them. Automation is largely the peacetime expression of the technological know-how accumulated in developing wartime weapons.

Automation is the means of:

—Eliminating the back-breaking drudgery of repetitive operations. The workman becomes the supervisor of a machine rather than its slave.

—Raising productivity through more intelligent use of machines and controls. This is necessary because the gross national product is increasing faster than the work force.

—Producing more goods at lower cost so every American can enjoy the benefits of a higher standard of living. A \$3000 automobile would cost 25 times as much if produced by hand labor.

—Assuring an adequate and superior defense capacity. Wars are won on the production line, not the battlefield.

Industry is in the ridiculous position of defending an improvement in manufacturing methods that not only is logical but absolutely essential to the growth and well-being of our nation.

Your management, your employees and your stockholders want to know what automation means to them and to your organization. Why not tell them?

Irvin H. Bush
EDITOR

The formula for uniform quality is

INLAND

complete manufacturing control from mines to shipping dock



But can you be sure it will work as well next month?

When your steel starts with ore from the same mines, reduced to iron in the same blast furnaces, refined to steel in the same open hearth furnaces, rolled on the same mills, by the same men, time after time, order after order . . . you can be certain that your steel is as uniform in quality as the best raw material sources, the finest steelmaking facilities and the most experienced steelworkers can make it.

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul
Davenport • St. Louis • Kansas City • Indianapolis
Detroit • New York

Principal Products: Sheets • Strip • Structural
Shapes • Plates • Bars • Tin Mill Products • Rails
and Track Accessories • Coal Chemicals



Will many walk out in '55? That's the question as . . .

Labor Stirs Contract Storm

THE 1955 LABOR POT is coming to a boil.

Ford will bear the initial brunt of the UAW's demand for a guaranteed annual wage (GAW). Policymakers of the steel union will meet May 11 and 12, to decide on wage proposals. There also is the possibility of a rail strike.

Automakers — Ford Motor Co. must reach a contract decision before General Motors Corp. GM was taken "off the hook" as the first candidate when the CIO, United Auto Workers decided to terminate its labor contract with them on June 7—six days after the Ford contract expires. Walter Reuther,

president, UAW-CIO, is on the scene at Ford, directing the strategy which he hopes will bring a GAW to his members.

American Motors Corp. also has been given a reprieve. Its contracts, which were to expire on June 1 and July 1, have been extended by the UAW to Aug. 12.

Rebuttal—Henry Ford II, president of Ford, states: "Perhaps what is needed is a new kind of prosperity insurance policy based on a reasonable, business-like, pay-as-you-go plan, with limited and predictable cost. As long as we are free to operate on sound business principles, we can afford to pay

good wages and offer the kind of fringe benefits that Ford men and women now enjoy. Any proposed security plan that impairs the healthy conditions of the company with dead certainty will impair the real security of the worker."

GM is talking in terms of a new five-year plan. Reviewing some of the progress made in the last five, H. W. Anderson, vice president-personnel, states: "This plan has added up to higher pay, steadier employment and the addition of 128,000 new jobs." At this time, the union is willing to consider only a two-year contract.

Steelmakers—David J. McDonald, president of the steel union, is calling for a meeting of the wage policy committee and the executive board on May 11 and 12. Wage proposals will be drawn up at this time. Some 600,000 persons, employed by basic steel producers, will be affected. It is anticipated that wage demands will be considerably higher than the 5-cent hourly increase granted millworkers last year. Fringe benefits gave the workers a total increase of 10 to 12 cents then. The steelworkers already have served formal notice that wage contracts will be reopened this month.

Expectation is that the steel companies will grant a raise before the June 30 deadline, and that this will be the signal for a round of steel price hikes.

First GAW?—Philadelphia Local 105 of the International Union of Electrical Workers (IUE) claims that it has negotiated the first GAW in the current CIO drive. The union received a 9-cent hourly increase for all workers at International Resistance Co. Instead of taking it in wages, the local will apply the entire amount to a GAW fund. Details, to be worked out by management and the local, must be completed by Apr. 1 next year.

If there is no working plan by this time, workers will receive cash payment, plus interest. Local 105 members may prefer cash payment in a lump sum rather than a GAW plan—one factor which may bring strong pressure on local union leaders for disbandment of the GAW plan next April.

No GAW—Philco Corp. and IUE

have reached agreement on a new contract. The settlement, affecting 6500 workers in Philco's television and electronic plants, provides for a 5-cent hourly general wage increase and improvements in fringe benefits. GAW was not a serious factor in any of the conferences with the union.

Rails, Too—If no solution can be found in the debate on the pay and equity case (the union is demanding a graduated rate of pay and other benefits), there may be a railroad strike.

"This has been in negotiation for about five years now," states J. A.

Paddock, senior vice president, Order of Railway Conductors and Brakemen. "If we don't get a settlement, there will be a strike."

Still Another—The UAW also will seek a guaranteed annual wage from Allis-Chalmers Mfg. Co. In addition, the union is asking for a uniform, six-plant master agreement, a 10½-cent pay raise and pension and health benefit increases for some 15,000 workers.

Strikes: March Tabulation

The Department of Labor reports that 220,000 workers were

involved in 450 work stoppages in March, 1955—150 were holdovers from previous months.

Tally for the first quarter shows Strike idleness is below any similar postwar period.

Wages Up, Hours Down

Straight time average hourly earnings of production workers in machinery manufacturing establishments rose 3 per cent from January, 1954, to January, 1955. During the period, the Bureau of Labor Statistics reports, scheduled weekly hours were reduced slightly.

Batteries, Tetraethyl To Pace Heavier Lead Use in 1955

LEAD CONSUMPTION in 1955 possibly will be up as much as 14 per cent over 1954. So says Simon D. Strauss, vice president, American Smelting & Refining Co., New York.

Speaking before the annual meetings of the Lead Industries Association and the American Zinc Institute, Mr. Strauss said: "As of

today, production and consumption of both lead and zinc appear to be in approximate balance. If stockpiling were to stop, producers should not be faced with the problem of rapidly mounting stocks—as in 1952 and 1953."

Good Supply—That lead is readily available is evident from a report prepared by O. M. Bishop,

commodity-industry analyst, Bureau of Mines. Estimated lead content of the world's measured and indicated ore reserves as of last December was 39,865,000 tons. With continued explorations uncovering new reserves every year the 12 users of lead which follow can look forward to a plentiful supply of the metal.

Cable Sheathing: Rubber and other jacket materials have made inroads here. But heavy growth of power transmission should provide continuing market for lead. Outlook: 1955 should be better than 1954. Next few years should be on the 1952-53 level of consumption.

Ceramics: Electronics and the jet age will boost use of ceramics to four or five times beyond normal growth. Outlook: Use of lead could go into six-digit figures in the future.

Chemical Construction: Industry's familiarity with lead, plus its competitive cost, availability and chemical corrosion resistance are in its favor. Its weight and poor resistance to temperature and abrasion are against it. In the synthetic organic chemicals, lead doesn't figure to play an important part. Outlook: Because of the latter point, use of lead will not keep pace with the growth of the chemical processing industry.

Lead Paints: Standard warning about lead poisoning has been adopted for lead-paint cans, but much has to be done along these lines. Development of inorganic pigments continues. Outlook: Trend away from lead paints also continues.

Leaded Steel: On the basis of present steel industry capacity, ultimate output could be 400,000 tons a year, consuming 1600 to 1800 tons of lead. Outlook: Ultimate will not be reached for some time, but use is growing.

Metal Protective Paints: Nothing has been developed that will completely replace red lead paint. Much development on red lead must be undertaken if it is to hold that leadership. Outlook: Good growth in line with construction boom.

Nuclear Shielding: Where weight and space requirements outweigh added cost of cement, lead will be used for nuclear shielding. Mobile reactors will use lead shielding. Outlook: No great tonnages required until nuclear power is further developed.

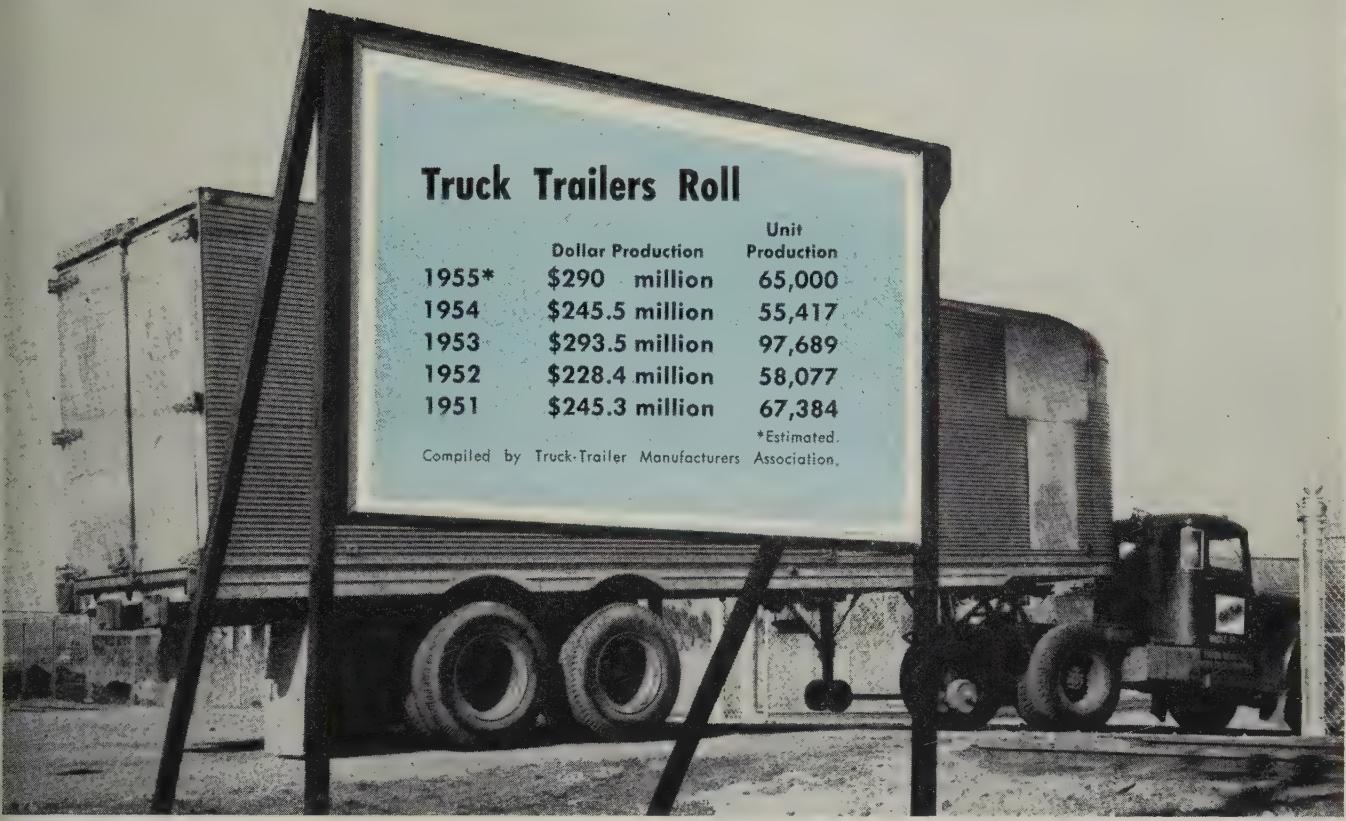
Porcelain Enamelled Aluminum: Development of a 30-to-50 per-cent frit has increased color possibilities and working characteristics of this product. Outlook: The construction boom will result in good demand for lead for many years.

Railroad Industry: Dieselization resulted in increased use of battery plates but a loss in lead bearings. Lightweight passenger equipment and heavier freight stock have balanced out the lead use. Outlook: Until atomic-powered locomotives come on the scene, lead use probably will not increase.

Solder: Growing electronics industry will pace use of solder. Canning industry is still growing and using a higher lead content solder. Heavy auto production means more radiators. Outlook: 1955 will be better than 1954.

Storage Batteries: Replacement units in 1955 will be up 2 per cent over 1954; original equipment units will be up 5 per cent. Total batteries will number 31,760,000 units, up 4 per cent. Lead content will be about 400,000 tons, compared with 335,000 tons in 1954. Outlook: Excellent.

Tetraethyl Lead: New plants in England and Canada will take some business from U. S., but increased use of autos and gasoline continue to make this the No. 1 user of lead. Outlook: 1955 will be 4-5 per cent better than 1954. That rate of growth will hold for the next three to five years.



Pennsylvania Railroad

New Materials, Big Units Show Industry's Route

AUGUST FRUEHAUF started something when he built the first bona fide truck trailer in 1915.

From that beginning an industry grew which put the more than 550,000 civilian trailers on the road today. This year it will turn out 65,000 units (see chart).

Second Look—Production is bigger than it appears because military output will be the lowest in four years. Service vehicles are usually smaller than civilian types. Governmental agencies took 10,179 units last year, 44,516 in 1953 and 12,833 in 1952.

The estimated 125 companies in the industry will do \$290 million in business this year, just a shade under the record \$293.5 million transacted in 1953. Some 25 firms will handle the bulk of those sales. Fruehauf Trailer Co., Detroit, and Pullman Inc.'s Trailmobile Co., Cincinnati, are the largest.

Pass Along—Because truck-trailer manufacture is largely an assembly operation, suppliers play a big role in the business. Nearly

70 are associate members of the Truck-Trailers Manufacturers Association. They supply springs, axles, tires, wheels, rims, braking equipment, wiring harness, steel, copper, aluminum, other products.

This year the industry expects to use 1,625,000 tons of carbon steel, 65,000 tons of alloy steel, 9.1 million lb of stainless and 35.3 million lb of aluminum.

Growth Metal—Growing fastest is use of aluminum. That's because of trailer manufacturers' concern with weight reduction. Since before World War II, the trailer's weight-carrying capacity has doubled and its volume-carrying capacity has gone up one-third, but its weight is about the same because lighter metals are used—both aluminum and alloy steels. At least one firm, Strick Co., Philadelphia, builds a plastic van. Other firms use plastic sections—corners or roof caps.

Every pound saved in tare weight is worth \$1 a year in additional freight that can be carried.

Every cubic foot added means \$50 a year to the carrier in more revenues. To get more weight and volume capacities, the industry has turned to tandem-axle, 35-ft vehicles. Before the war, the unit commonly was only 26 or 28 ft long with a single axle.

Trend—Another development in the industry is increasing standardization. That's to permit more trailer interchange.

Also promising is Fruehauf's new stainless steel tank car to transport oil and possibly other products (see page 60). If successful, it will increase sharply stainless use by the industry.

Value Up—All those developments mean that the average value per trailer is rising. It was \$4496 in 1954, compared with \$3790 in 1951.

Developments presage dramatic growth, too. When the industry celebrates its 60th anniversary in 1975, look for some 175,000 trailers to be built that year. Their value: \$920 million.

Blough, Hood Guide U.S. Steel

As the new chairman, Mr. Blough will be chief executive officer to succeed the retiring Ben Fairless. President Hood is designated chief administrative officer

U. S. STEEL has turned over its corporate reins to younger hands."

Roger M. Blough succeeds Benjamin F. Fairless as chairman and chief executive officer. Clifford F. Hood, president since 1953, takes on additional duties as chief administrative officer. Mr. Blough has been vice chairman of the board since 1952, general counsel since 1953.

Mr. Fairless, who reached the normal retirement age of 65 on May 3, will continue as a member of the board and the finance committee. He also will head a new executive advisory "team."

John S. Tennant, who became associate general counsel in January, is the new general counsel.

"Unless the chance for advancement is constantly kept alive, at every level of management, it would only be a matter of time until the most able of our younger executives would seek opportunities elsewhere," Mr. Fairless explained as he stepped down as chairman of U. S. Steel.

Perfect Timing—His move came at a high point in the corporation's history. First quarter re-

sults show steadily rising production and shipments. Total sales jumped over 5 per cent. Net income was up some 62 per cent. Total earnings were almost \$73 million. Total operating expenses dropped some 2½-per cent.

The second quarter looks just as bright. Since early in the year, orders have exceeded production. Backlogs of unfilled orders have increased rapidly—total now is 6½-million tons.

In Retrospect—Taking a backward glance, Benjamin Fairless points out that in the last 20 years U. S. Steel has quadrupled sales, increased steelmaking capacity about 30 per cent and raised shipments 70 per cent. Since 1936, \$3½-billion has been spent on capital improvement. Capital expenditures for modernization amounted to \$50 million in the first quarter.

Future—Authorized projects for improvements getting under way will require \$433 million. Mr. Fairless reports that the equivalent of a Fairless Works will have to be created every two years for the next two decades in order for the company to retain its leader-

ship in the industry. While this does not mean entirely new plants from scratch, it does mean that new capacity will have to be added to existing facilities, and that there will be a constant need for improved technology and better shop practices.

"We're Prepared"—The retiring chairman states: "Realistic appraisal of the long-range future can only lead to the conclusion that the prospects for our company are the brightest in its history. There never has been a time when it was better equipped and better prepared to meet the opportunities and responsibilities which lie before it."

Steel Employment Up 13,500

Steel employment in March was 629,900, an increase of 13,500 over February. The gain was one of the largest in years, states the American Iron & Steel Institute.

The number of hours worked by employees in March—109,718,639—was close to the record set in 1953. Wage earners worked an average of 41.1 hours a week, compared with 40 in February.

The estimated March payroll was \$288,229,000, against \$255,130,000 in February.

Machine Tool Checkup Urged

More government machine tool buying may be on tap if one recommendation of the Hoover Commission's Task Force on Surplus Property is followed.

It advises a program for safe storage of important government-owned machine tools needed to produce aircraft, ammunition, atomic weapons and other strategic items. Part of the program would be survey to determine if there are duplicates of critical tools in inventory. If no duplicates are in government reserves, the necessary tool would be bought and stored in safe place near the plant where they would be used.

But there also could be a cut in spending. The task force recommends provisions for loan or lease of an idle tool from one government agency to another for an emergency need if it will prevent new buying and save money without jeopardizing national security.



Roger M. Blough (left) new chairman and chief executive officer, and Clifford F. Hood, president and newly designated chief administrative officer, will shoulder the responsibility for the success of U.S. Steel Corp. in the future



Clevite's Weckler, Burwell and Myers set pace as . . .

New Products Mean Executive Diversification, Too

HINKING OF DEVELOPING new products? Clevite Corp., Cleveland, is discovering it means company expansion, plus the development of self-contained, diversified management units.

Clevite is composed of: Cleveland Graphite Bronze Co., Brush Electronics Co., Brush Laboratories Co., Clevite-Brush Development Co., Clevite Ltd., Harris Products Co. and Transistor Products Inc.

Sales Jump — This organization, which had sales of \$60.1 million last year, was a one-plant company (Cleveland Graphite Bronze) in 1941—with sales of \$10 million.

Bearings and bushings are still the basic commodity, accounting for about half the gross sales. There is a rapidly growing list of new products, which include: Rubber and metal parts, oil seals, wear plates, electronic instruments for industrial and research use, magnetic recording and reproducing equipment, transistors and diodes. The standard, long-established product line, bearings and bushings, is being complemented by electronic equipment to insure growth.

Status Quo — As each company joined Clevite, the firm's existing management was kept largely intact. The "central staff" has drawn its personnel from the individual companies forming the corporation and by bringing in some "outsiders." Examples: James L. Myers, chairman and president of Clevite, formerly was president of Cleve-

land Graphite Bronze. Herman L. Weckler, vice president and general manager, had retired from the same position with Chrysler Corp. He accepted his present assignment "because of the management challenges involved."

Central Staff Functions — This small advisory group is responsible to see that all the advantages inherent in common ownership are realized. Specific duties include: 1. Forward planning for the entire group. 2. Establishing over-all financial policy. 3. Providing performance goals. 4. Developing sound marketing data on which to base merchandising programs. 5. Co-ordinating the affairs of the entire "family of companies," so that each unit can add strength and contribute knowledge to other member firms.

Each company or branch is self-contained, its executives having full authority to bring out individual resourcefulness and independent action. While the central staff helps to integrate various elements, each unit has its own functional departments, such as accounting, personnel and sales.

Consolidated Research — At the top of the new research "package" is the research and development committee of the board of directors. This group sets the general research pattern. Under this body are two separate companies: Brush Laboratories, dealing with research into basic materials and their ap-

plications, and Clevite-Brush, developing new products and improving old ones. Both groups spend time on fundamental research.

Future — W. Russell Burwell, vice chairman of the board, reports: "We are paying particular attention to selecting new products and research programs. We do not want to become too diversified. It is our aim to maintain a good balance of products—also a good balance of abilities and personalities among the people who help lead the company and its units."

Brand Counterfeitors Beware

Conviction of the Barrack Electronic Corp. on a charge of brand counterfeiting is turning on the green light for General Electric Co. to inaugurate a campaign designed to "eliminate frauds."

J. M. Lang, tube department general manager, states: "We will increase our own investigative efforts and will co-operate to the fullest with the authorities in prosecution of cases involving brand counterfeiting of electronic tubes."

ODM Gives Tax Amortization

Certificates of necessity for rapid tax amortization were issued by the Office of Defense Mobilization for 52 new or expanded facilities from Apr. 7-20. Their value: Over \$139 million.

The Seaway: Channel for Business

When it's completed in 1959, the auto industry alone expects to save \$10 million annually on freight. The seaway could serve more than half of U.S. metalworking

SIX STATES with 40 per cent of the nation's metalworking plants will get an outlet to the sea in 1959. Two states, New York and Pennsylvania, with over 20 per cent of those plants, will get additional world ports when the St. Lawrence Seaway opens.

What will be the industrial significance of the seaway?

To find the answers, lake port cities—Buffalo and Oswego, N. Y.; Erie, Pa.; Cleveland, Lorain and Toledo, O.; Detroit; and Duluth are spending \$300,000.

The St. Lawrence Seaway Development Corp. gives these answers: Iron ore and grain will dominate first year traffic. By 1965, traffic will total over 52 million tons.

The seaway will allow the steel industry to grow and expand about where it is. Without the seaway, steel's increasing dependence on foreign ores might have impelled a greater move to seaboard areas.

In considering the effect of the project don't overlook the powerful fillip given to business by port development and construction of the seaway itself. Our share of the cost is limited to \$105 million—Canada's is about \$200 million. The construction of control dams and powerhouses by New York and Ontario will add another \$600 million.

Getting Ready—Chicago has a \$125-million port program under way. Facilities at Lake Calumet will transfer cargo from ocean ships to river barges, thus linking the Mississippi river barge system with the seaway. Milwaukee will start a \$2-million viaduct. Windsor, Ont., proposes spending \$19 million for port development. A \$20-million cargo terminal is recommended in a port study at Toledo. Canadian ports are farthest along in port development, but each port is bidding for its share of more than 36 million tons of freight expected in the seaway's first year.

Up to 22 new ships and 7 new

lines are expected in the St. Lawrence this year (the present channel is 14 feet). Experience gained with small ships (less than 2500 tons) will be valuable when the 27-ft seaway starts. The new channel will go only to Toledo. Upbound, a 21-ft channel at Detroit governs. Until it is deepened, small ships will continue going to the western lake ports.

Plans and Expectations — To start, foreign lines probably will use six 8000-ton general cargo vessels. France is building three new vessels of about 6000 tons. Luxury passenger traffic is not expected, but some ships will have from 13 to 15 cabins for passenger service. Overseas shipping is expected to exceed 5 million tons.

About three-fourths of the seaway traffic will be moved by lake-type ships. Top capacity will be 20,000 tons.

Detroit expects to get 300,000 tons of overseas freight in the seaway's first year. With adequate facilities, it hopes to raise this to 1 million tons.

Chicago expects to handle 50 per cent of the general cargo moving through the seaway.

Northeastern Ohio now accounts for about 3 per cent of the nation's industrial capacity. R. C. Heinton, marketing vice president, Cleveland Electric Illuminating Co., estimates the seaway will boost the figure to 5 per cent. He says: "I believe northeastern Ohio can become one of the major steel fabricating centers of the world."

Labrador Ore—M. A. Hanna Co. will take 6 or 7 million tons out of Labrador this year. Shallow draft ships will bring 1 million tons down the St. Lawrence. In 1956, 10 million tons of ore will be mined—1 million tons will come down the St. Lawrence, 8 or 9 million tons will be shipped to Baltimore and Philadelphia. In 1959, the first year of seaway operation, another 10 million tons of ore will be mined—7 million tons will come down the seaway; the balance will go to Baltimore, Philadelphia, Canada and overseas.

The final level of ore shipments will depend upon business conditions and tolls. But additional railroad cars and equipment in Labrador would enable production to be doubled or tripled.

Other shipments of ore moving through the channel will come from Liberia, Sweden and South America.

Tolls, Gains and Losses—Tolls will be fixed by negotiations between the U. S. and Canada. The U. S. must pay off its portion of the seaway cost in 50 years.

Manufacturers selling abroad

Estimated First Year Seaway Traffic

PRODUCT	MILLIONS OF NET TONS
Grain	12.1
Iron Ore	10.5
General Cargo	6.4
Coal	3.7
Petroleum	2.3
Nonferrous Ores	0.8
Wood Pulp	0.7

will have a new advantage—cheap water transportation. Look for more machine tools, tires, farm equipment, hides, road-building machinery, cars, trucks and auto parts to be exported.

Bulk materials will come in on the seaway—manganese, petroleum, tin, rubber, chromite, sulphur, phosphate and bauxite. Chemical plants using bulk materials and needing plentiful water supplies will build along the Great Lakes. Savings of 10 to 20 per cent on shipping costs of bulk materials are predicted.

East coast ports may lose up to 20 per cent of their bulk material shipments. A total loss for all classes of cargo is estimated at 10 per cent. But our population will be 177 million in 1960. With this increase, east coast ports may find that the seaway, instead of cutting sharply into their business, merely will afford a breathing space to get ready for the increased production that an enlarged population will demand.

Celler Raps ODM

Independent aluminum fabricators are complaining to the Anti-trust Subcommittee. Despite recent cuts in the stockpile take, they say they still aren't getting increased supplies of billets from some primary producers.

House Judiciary Committee Chairman Emanuel Celler (Dem., N.Y.) has written a letter of protest, blaming the Office of Defense Mobilization. Some mills, he writes, "refuse to accept orders for billets, which are relatively unprofitable, but will instead only accept orders for the more expensive semifabricated products, such as rods, bars and sheets."

Industrial TV Takes Color

Radio Corp. of America has added color to its closed-circuit television service for sales meetings, stockholder programs and other business uses. The new system projects color pictures on a 15 x 20 ft screen, and can be used to feed programs to local television stations or networks. Heart of the system is a 32-ft truck trailer which houses complete RCA Compatible-Color television equipment.

Needed: Better Managers

Needed skills can be taught, delegates told at National Metal Trades Association conference

THE LIMIT on your company's growth will be not customers, not products, not plants, not money, but managers. The development of better skilled managers at all levels—from first-line supervision up—is essential to meeting competition today and in the future.

That was the consensus of several hundred production executives who participated in the 10th annual plant-management conference of the National Metal Trades Association at French Lick, Ind., last week.

Immediate Value—Manager development, while the basic objective in long-range planning, also has immediate benefits. A good training program should show results within a few weeks or months.

Managing or working through others is a distinct and professional kind of work, says Harold F. Smidley, vice president, General Electric Co., New York. It has a philosophy which is learnable, teachable and applicable. General Electric's approach is based on these principles: 1. Managing is a profession. 2. Adult development comes basically from within the individual. 3. No uniform plan is possible to fit the needs of everybody within an organization.

Four Steps—General Electric's program: 1. The establishment of a proper managerial climate. 2. The planning for self-development of each individual. 3. The planning for manager manpower to meet the needs of the enterprise. 4. The planning for manager education which will prepare men for the difficult task.

"The need for a positive approach to manager development is shared by every business. Slapdash, haphazard decision making is too perilous, and the need for teamwork is too great to continue to rely on the purely intuitive kind of managing which so often has been relied on—and, for that matter, often worked—in the past," warns Mr. Smidley.

"No Foremen"—"We upgraded all our foremen to department man-

agers," remarks Walter G. Koch, president, International Steel Co., Evansville, Ind. "The project initiated 16 months ago is having such beneficial results that it will be continued and expanded. It is bringing an entirely new concept of foremen who traditionally have been neither labor nor management."

Under International Steel's program, the foreman—now known as a department manager—is part of management's staff, participates in management conferences and bi-weekly information meetings. He undertakes work simplification and job analysis studies.

Self-development of first-line supervision is encouraged, and the company foots the bill on any approved program.

Suited—"Most noticeable change in the foreman to department manager policy has been in the physical appearance of the man," says Mr. Koch. "He wears business suits or slacks instead of factory clothes. Where once he listened to his workers' gripes and problems amidst the noise and rumble of production, he now has his own office on the factory floor.

"This makes for better organization and thinking, particularly because every single idea and suggestion is written down and later studied by an idea committee."

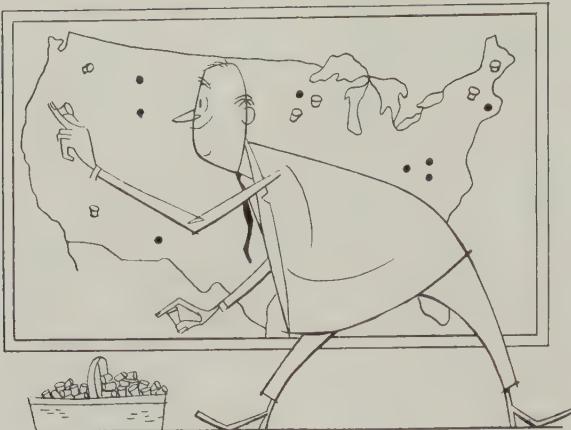
Costs Down—Results of International Steel's program: Lower costs, higher productivity and better profits.

"We are tremendously enthusiastic over our program to strengthen our first-line management," Mr. Koch explains.

Employees Use Taft-Hartley

Employees filed 67 per cent of the unfair labor practice charges against unions during the first quarter of 1955. Employers filed 28 per cent; unions, the remaining 5 per cent. The National Labor Relations Board reported 413 charges were filed against unions in the quarter.

In four out of five de-authorization elections, employees voted to revoke union shop clauses. In 23 out of 37 de-certification elections, employees voted to de-certify their union.



Can You Plug Hole in Defense Armor?

DEFENSE mobilization plans are about crystallized. Are you in on them?

Item—Who's getting the business? In placing orders, the services have been told to favor "planned producers" — the companies with defense output experience. During the Korean War, which wasn't a full mobilization period, 100 per cent of guided missiles, 92 per cent of electronics, 72 per cent of ammunition, 70 per cent of critical hard goods and 64 per cent of weapons contracts were procured through planned producers.

Item—The accent on tools is being carried through by all branches of the service. The Air Force is to spend \$84.6 million of Defense department funds to buy 1000 ma-

chine tools, with a production lead time of 16 months or longer. Its total requirements for long lead time production equipment and machine tools are estimated at about \$846 million. To build reserves, the Office of Defense Mobilization also is considering the extension of advance buying of tools and equipment, using some of its borrowing authority funds.

Item—Charles C. Finucane, under secretary for the Army, remarks: "One dollar devoted to increasing the production base can give us the same defense readiness as \$4 in reserve stocks. One tank plant operating on a minimum basis gives us the same value as a stockpile of 11,500 tanks worth \$1.5 billion."

New Power Goal

"We don't care where it comes from, just so it's electricity." That gives the official kiss of death to rumors that ODM's newly announced power goal expansion stems in part from the desire to boost the building of nuclear electricity facilities. The program is for defense mobilization.

Says George A. Landry, ODM's assistant director for production: "Our new goal of 150 million kilowatts by 1958 will provide alternative power for any area whose normal supply might be knocked

out by a bomb attack." ODM is already making a start on processing certificates of necessity which have been pending since the suspension of the former goal in 1953. Industry estimates that to reach the goal, it will take more than \$4.6 billion in power facilities, more than 1.3 million tons of steel products.

Titanium Tempest

The General Services Administration reports that E. I. du Pont de Nemours & Co. Inc. has asked and been granted another 90-day

extension on its proposed 7200-ton sponge plant, after talking with ODM. It's a typical industrial reaction to the titanium tempest brewing in Washington.

But before the legislators swing into action, take an objective look at achievements. Ten years ago, most people thought titanium was something to clean teeth with. Though the program has blundered often, forced growth is at the heart of many of the difficulties. There's a rational case to be made for congratulations on the policies which have resulted in "too much sponge, not enough fabricating." Industry can't be expected to design a part without assurance that there'll be metal to make it next year.

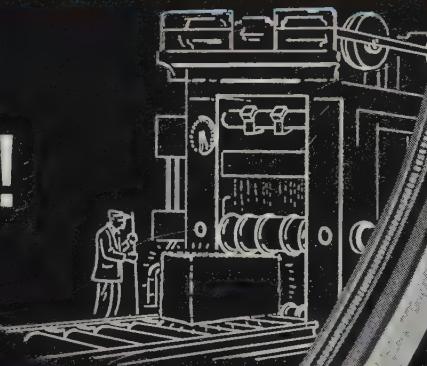


Meet Joseph Eskridge: The new director of the Automotive Division Business & Defense Services Administration, he's the first official of the automotive industry to serve in this capacity since the agency was organized in October, 1953. (Under a rotation system executives from industry serve the government without compensation for six months or longer.)

Mr. Eskridge entered the auto business in Detroit in 1919 as a draftsman with Dodge Brothers Corp. In 1926 he joined Hudson Motor Car Co. Today, he's vice president in charge of manufacturing for American Motors Corp.'s Hudson Special Products Division. He can be reached in Washington at Sterling 3-9200, Ext. 3295.



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More automobiles, farm equipment and industrial machines rely on C/R Oil Seals than on any similar sealing device.

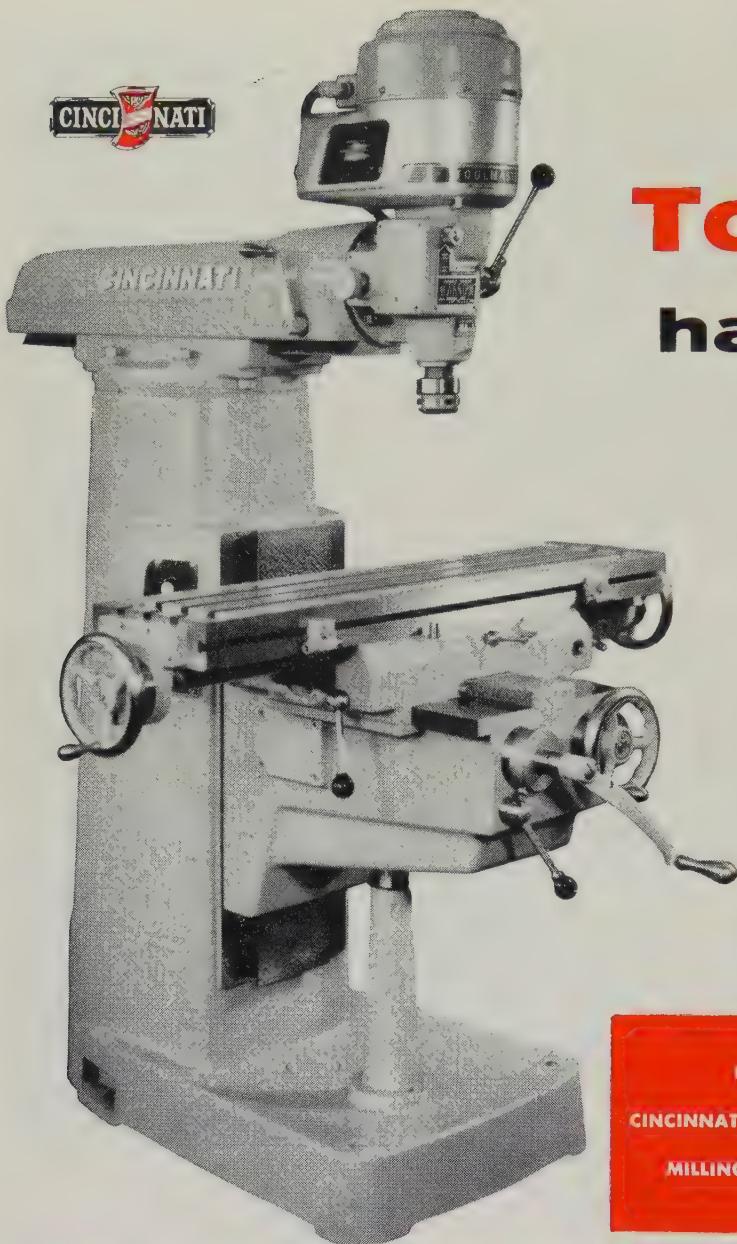
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The new Toolmaster has everything

. . . and there's a good reason. Before a single drawing was put on paper, our market research engineers went into shops everywhere, asking what was wanted in a small manual feed toolroom milling machine. Operators, tool engineers, machine tool buyers, maintenance supervisors . . . all had a voice in the design of the new CINCINNATI Toolmaster. Yes, there's a very good reason why these new milling machines have everything desired for fast, low-cost milling operations in toolrooms, contract shops, tool and die shops, repair departments, and others. Just take a look at the three typical features illustrated below. They were operator-approved in actual field tests; management-approved in cost-of-production records. Would you like to have more information? Just write for new four-color catalog No. M-1870-2.

THE CINCINNATI MILLING MACHINE CO.
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NEW
CINCINNATI TOOLMASTER
MILLING MACHINE

Built in three styles:

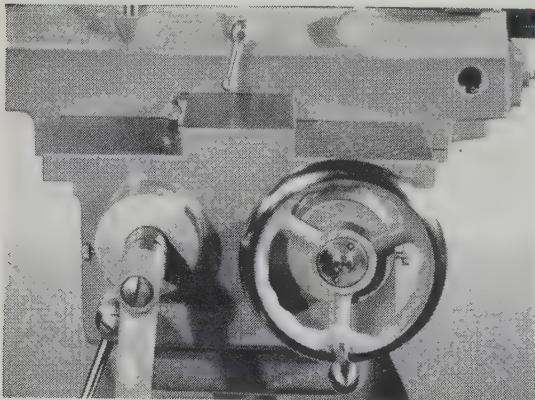
- 1A—Manual feed to quill, 1 hp motor
1B—Power feed to quill, 1 hp motor
1C—Heavy duty head, 2 hp motor

- Range:
16" table traverse
10" cross
17" vertical

CINCINNATI

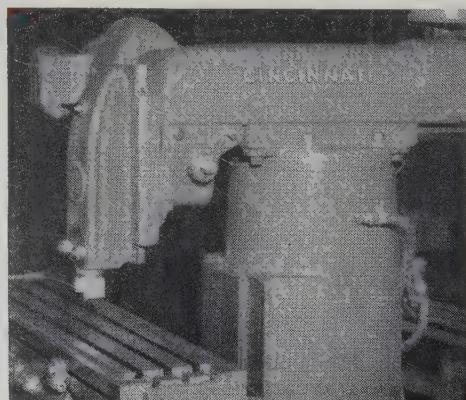
Extra Wide Knee

Has two advantages: wide square gibbed bearing ways for maximum strength; narrow guide for smooth cross adjustment.



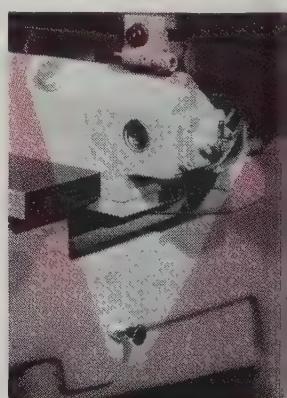
Shaping Attachment

Jobs that would often be assigned to another machine can stay right on the Toolmaster with the ruggedly-constructed Shaping Attachment.



Oil-Shot Lubrication

Saddle-table parts and way bearing surfaces are lubricated from centralized oil-shot system.





Visser's Motto: For Competition, New Models

AS A MEMBER of Holland's soccer team, Gerrit A. Visser learned the lessons of competition in the Olympic Games.

After receiving his mechanical engineering degree in the late 1920s at the Technical Institute of the Netherlands, he decided to come to America—where competition was the steppingstone to opportunity.

Employment—Since then, Mr. Visser has worked at Holley Carburetor Co., Detroit, where he was in charge of methods tooling; Oldberg Mfg. Co., Detroit, as works manager; Jaeger Machine Co., Columbus, O., as engineer in charge of development and manufacturing; Manning, Maxwell & Moore Inc., Stratford, Conn., as chief manufacturing engineer.

He's now at Swan Engineering & Machine Co., Bettendorf, Iowa, where he's developing a new, 3-roller, spin-drawing machine.

His drive to find a way to do it cheaper and better has led to several developments (for which he holds patents) in the automotive, instrument and gage fields. "If America is to remain great," he says, "we must continue to create better production methods at lower cost."

Competition—"It is just wishful thinking that tariffs and trade agreements will protect us

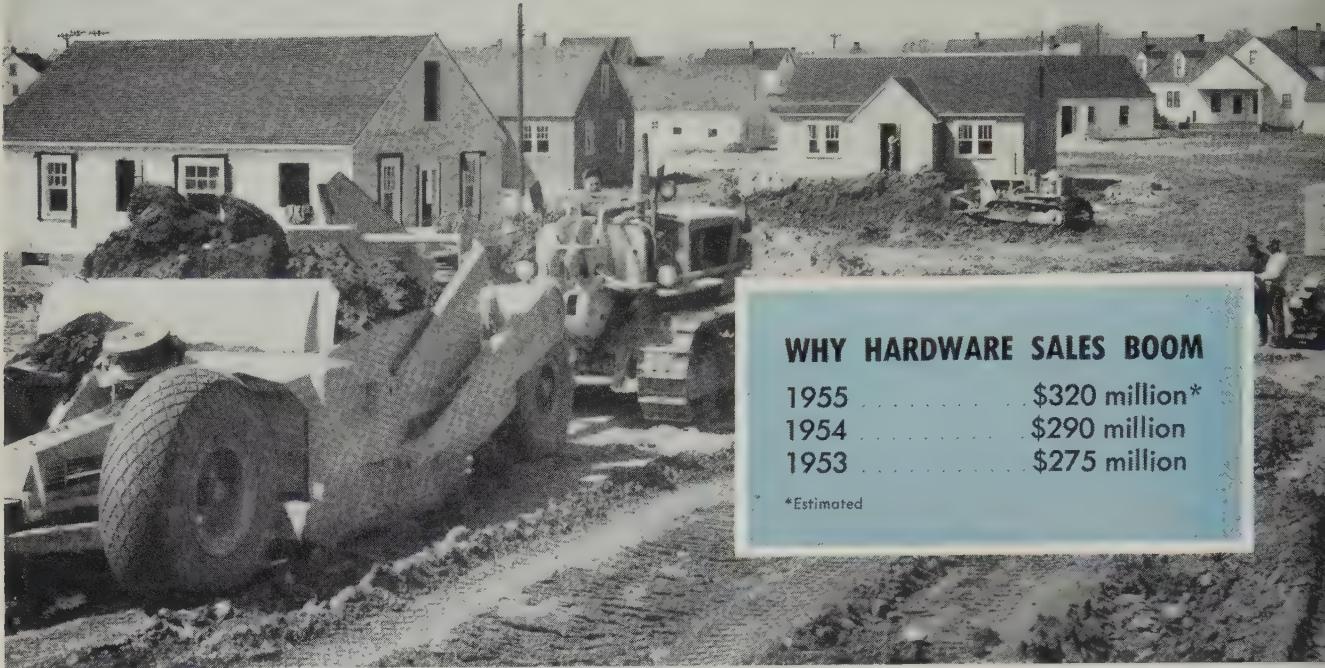
from world competition," Mr. Visser states. "Europe has a 5:1 labor cost advantage over us, but her philosophy has been: When you get something good, stick to it. Ours is a let's have a new model way of life, which stimulates creative thinking and will keep us in front industrially."

Caution—There is one factor he believes we must guard against: Young engineers, who will be tomorrow's managers, are specializing too much. Mr. Visser believes that companies should introduce more programs which will give engineers wider experience and training in co-ordinating development engineering, product design, process engineering and market analysis.

"You frequently hear warnings against our capacity to overproduce, especially in automobiles," he comments. "I don't believe we have anything to fear. We have tremendous growth possibilities."

"Our competitive way of life will promote our growth," he emphasizes. "And our standard of living will continue to rise. How many of us are looking forward to owning two cars?"

A growing population will also help to insure that the U. S. will not overproduce—that markets will continue to expand.



WHY HARDWARE SALES BOOM

1955	\$320 million*
1954	\$290 million
1953	\$275 million

*Estimated

Caterpillar Tractor Co.

Builders Hardware: Construction's Growing Child

BUILDERS HARDWARE will lock up record sales of \$320 million this year. Orders and shipments are 10 to 15 per cent ahead of last year's.

The hardware man's success hinges pretty much on the fortunes of his parent industry, construction, with the hardware bill averaging about 1 per cent of total material costs in residential building—nearer 2 per cent in commercial and institutional structures.

Front Door—Construction is expected to hit a record \$40 billion this year. Add in the still growing "do-it-yourself" movement, and out comes a nice piece of change for some 180 hardware companies.

But those companies aren't content to sit on the back porch of the construction boom. Figuring out new ways to get in the front door is an important part of the business.

New Products — For example, Yale & Towne Mfg. Co., Stamford, Conn., has developed two types of concealed door closers to replace the usual, nonesthetic pneumatic

or hydraulic kind in common use.

Kwikset Locks Inc., Anaheim, Calif., is active in powder metal products as well as being busily engaged in extending its line of locks. Schlage Lock Co., San Francisco, has a new line of door closers.

Fair Exchange—Not forgetting the hand that feeds it, American Hardware Corp., New Britain, Conn., is building a new plant at Clarksdale, Miss. It will house its door check department and some other operations.

Almost every metalworking operation is used in making builders hardware, from stamping to welding, forging, plating and diecasting. Steel and brass remain the favored raw materials, but stainless steels, aluminum alloys and metal powders are getting a bigger play.

Techniques—Not caught behind the door when cost-cutting tips are passed out, hardware firms are quick to take advantage of cheaper fabricating techniques. For example, diecasting considerably reduces the number of padlock parts with complex shapes.

Powder metals are coming into more extensive use. On one lock cylinder, use of sintered brass saved 12 finishing operations needed for sand-cast cylinders formerly used.

Distribution—Only a small volume of builders hardware is sold direct from factory to user. Fully 95 per cent of it moves through wholesale distributors, general hardware stores and dealers in builders' supplies, such as lumber yards.

Even on large orders, such as would be needed for a school or office building, manufacturers usually work in close co-operation with district distributors.

Prices Steady—Considering the growing volume of business and the rise in general construction costs, hardware prices have been remarkably steady—they went up only 1 per cent in 1954, compared with 5 per cent for over-all building costs.

If prices of basic materials continue to climb, hardware probably will be forced to tag along. But one thing's sure: Business will be good.

Industry Finds Its Voice

Looking for more sales and better acceptance? One way is to have company speakers available who can sell your firm and industry in general to the community

Since 1950, Republic Steel Corp. personnel have given 1753 talks before 124,462 people.

Republic is just one of many metalworking companies that have found their voice through an organized speakers bureau. "American industry needs a strong voice," explains a Republic spokesman. Republic's talks help clear up misinformation about the steel producers. They also contribute to mutual understanding.

Selling Strategy—A growing number of firms are realizing that they can build better relations through keeping the community informed. For example: General Electric Co. has over ten speakers' bureaus in its divisions. A phone call to a GE district office will put you in touch with an experienced speaker. He will be able to talk on a wide variety of subjects, including atomic energy.

"Sometimes we're snowed under with requests for speakers," a company official admits, "but we encourage our people to address groups."

Bureaus Mushroom—Republic formed a speakers bureau in November, 1950. It proved to be so

successful that six more have been organized in plant cities. In March, 1955, Republic speakers addressed 61 audiences.

Lack of experience shouldn't hamper a firm from reaching the public through talks. U. S. Steel Corp. has developed a speakers training program, while many other firms hire college professors to instruct a course in speechmaking. Others send management personnel to night school.

Another Way—Percy H. Whiting, managing director, Dale Carnegie sales course, reports: "Between 1949 and June, 1954, General Motors Corp. has held 350 Dale Carnegie courses, with a total enrollment of 14,300. Some 23 per cent of the corporation's salaried employees have completed this course in effective speechmaking."

If a high percentage of a firm's personnel are trained to speak in public, management can select the best man for any given assignment. This takes the load away from the "top executive" who often is the only qualified person to inform the public.

Remember—Often a metallurgist

or plant representative, properly trained, makes a better speech in his specialty than a vice president who is already involved with a full schedule of speaking engagements.

Metalworking firms must sell more than hard goods today. Says one executive: "It's just as profitable to sell such intangibles as honest political practices, the need for engineers and fundamental data on the American economic system. One good way is through company speakers."

Government Buys Metals

Progress in the government's purchase programs for strategic and critical materials as of Mar. 31 was:

Purchase of 3-million, short-ton units (20 lb each) of tungsten has been authorized—1,677,453, short-ton units had been delivered.

Manganese—purchases of 37-million, long-ton units (22.4 lb each) have been authorized, and 11,878,-867, long-ton units were delivered.

Purchase authorization of chrome ores and concentrates is 200,000 gross tons, of which 82,402 were delivered.

Mica deliveries were 5503 net tons—authorized, 25,000 tons.

Beryl deliveries were 626 net tons—authorized, 1500 tons.

Purchases of 1500 net tons of nonferrous crysotile asbestos (grades Crude No. 1 and 2) are authorized. Purchases totaled 847 tons.

Deliveries of columbium-tantalum ores and concentrates (foreign and domestic) totaled 9,084,159 lb.

Air Force Vs. Los Angeles

Air Force Secretary Harold Talbott's statement that aircraft contracting in Los Angeles should be stopped because of a "dangerous employment trend" is being sharply criticized.

Carl P. Miller, president, Los Angeles Chamber of Commerce, reports: "If Mr. Talbott wishes to cut off aircraft contracting in Los Angeles because 25 per cent of the city's industrial employment is in aircraft, I expect him to stop purchases of trucks and cars from Detroit where 46 per cent of the industrial employment is in the automotive industry."

To Handle Speaking Requests Smoothly:

- Publicize and promote what you have to offer in the way of speakers and subjects.
- Process all requests for a speaker quickly and efficiently.
- Do not make top management carry the ball alone. In a plant town, a plant representative may be a more logical speaker.
- Give professional speech training to a wide segment of management.
- Have an editorial committee check speeches before they are delivered.
- Do not give too many talks to one club or in one city or area.
- When possible, use preplanned visual aids to enliven speeches.

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Call on our 25 years of specialization in flat-rolled products. Our representative will be glad to discuss your particular needs at your request.

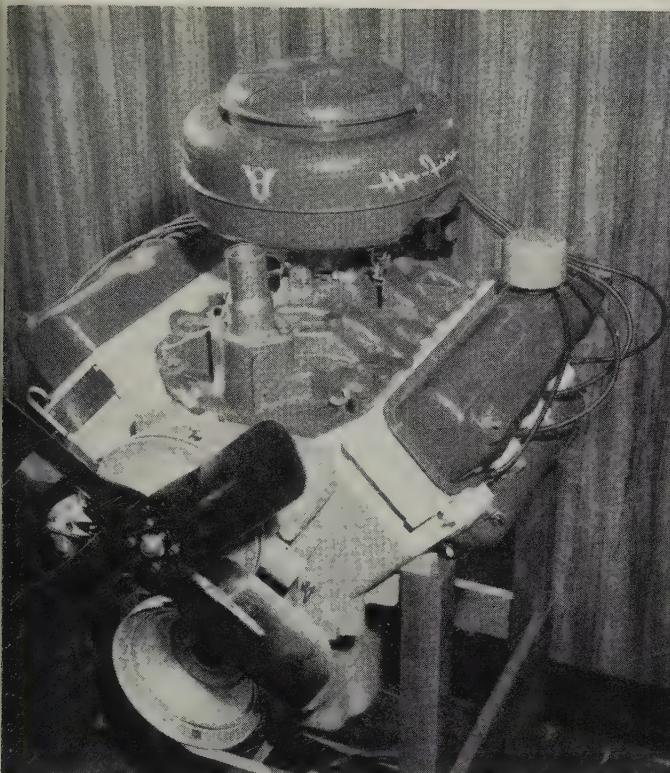
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This Plymouth engine . . .



is really a plastic model as . . .

Plymouth Finds Dummy Makes Production Sense

PLASTIC V-8 engines are in pre-production at Plymouth's new engine plant.

The explanation for this moderately surprising statement is that they are full-sized plastic models of the 1956 Plymouth V-8 engine which, of course, will be built of metal. They are replacing metal, however, as prototypes for use in tryout of the equipment which will begin producing the Plymouth power plant come August in the division's new engine plant.

Cost Saver—The plastic engines are useful because blueprints give facts and figures but lack that old 3-D faculty for showing what's going to interfere with what. To solve this blind spot heretofore, preproduction engines have been hand-built out of metal at highly premium prices. Such little tricks as hammer forming an oil pan and valve covers cost plenty. What's more, an engine built this way takes time to turn out.

Plymouth's problem was that it didn't jump on the V-8 tooling until early this year, and it's shooting for an Aug. 1 production date. That didn't allow a great deal of time for model building. Master Mechanic Ray McCarroll came up with the idea of plastic models.

Precedent—Though no other automaker has used plastic engine models before to the firm's knowledge, men at Plymouth don't see anything unusual in the application. Plastic replicas of sheet metal parts have been used by Plymouth for some time to try out welding fixtures and handling systems. Laid up in molds of plaster taken directly from the full-sized wooden models of the car, they permit quick and easy recognition of possible problem areas due to physical interference, which is difficult to foresee from just a blueprint.

That's pretty much the function served by the plastic engines. Complete engines were shipped to tool

suppliers like Ex-Cell-O Corp., Cross Co., George L. Nankervis Co. and Buhr Machine Tool Co., while parts of the engines were shipped to others. That permitted the suppliers to check for clearance in the handling within the machine and answer other physical questions from the time they began to put the tools together.

In Practice—Plymouth has been using the engines, too. Among questions they have answered is the tryout of all mechanical handling for lack of interference. Railroad shipping racks were checked out with the plastic model engines. Motor test stands were developed with almost continuous use of a plastic replica of the real thing. Casting clearances were double checked, and, in one case, a slight change was made to avoid interference in assembly of the engine.

The engine lifting hook position was determined by lifting a plastic engine to find the balance point

and type of hook required. The location of the stamped serial number and the type of stamping device required were determined through tryout of a plastic engine. The oil filler cap and breather pipe locations were changed after it was observed that interference might develop with the ignition wires when the engine was in service. And the assembly fixtures to handle the engines during build-up were developed by trying a plastic model and observing requirements such as tool access, etc.

Time Saver—"We refer to them just about every day for the answer to some question," reports Carl J. Demrick, Plymouth's vice president for manufacturing, "and I feel it's safe to say that they have saved us at least 90 days in the development of our fixtures and handling equipment."

That's a lot of significance for plastic engine models built from wooden patterns in about a week. While the wooden patterns were made specifically for the purpose, since foundry patterns are oversized to allow for metal shrinkage, officials still figure the cost for the eight plastic engines is less than for one hand-made metal unit by a considerable margin. Then, too, the plastic is much lighter and easy to handle while retaining dimensional stability and accuracy comparable to the actual castings.

Deadline—The chances of getting the Plymouth V-8 engine plant into operation by Aug. 1 looked pretty remote to some outside the division early this year. Already, plans are being made for the transfer of personnel, and supervisory people are starting to learn the equipment they will be handling in the new plant.

It looks quite probable that Plymouth will make its date on the metal V-8—in part thanks to the wisdom of a plastic dummy.

Fruehauf Rolls Along

Translucent plastic corners for illumination in the front of long tractor trailers was one interesting materials development reported by Fruehauf Trailer Co. recently. Also announced by the firm is a new stainless steel Volume

Van and a new stainless steel tank trailer. The stainless steel van offers 35 per cent more capacity than the average trailer now on American highways, says the firm.

The firm also is experimenting with anodized aluminum for permanently colored trailer exteriors and expects to offer a variety of colors in the next two years if experiments are successful.

To meet demand for its products, which reached a new high in March (30 per cent above any previous month), Fruehauf has purchased a 100,000-square-foot plant at Delphos, O., and is building a sizable addition to its Ft. Wayne, Ind., plant. This brings to ten the number of plants in the U. S. and Canada.

Exhaust Notes

Chrysler Corp. announces seat belts as dealer-installed optional equipment on its 1955 cars. They will be sold in sets of three for the front seat alone or the car may be fully equipped with belts for six occupants. In view of recent findings by such impartial groups as the Cornell University, Indiana State Police and the University of California, there can be little doubt that the belts would

materially help reduce the number of fatalities.

Everybody who learned in high school that a body in motion tends to remain in motion until it smashes against the windshield probably already has seat belts. Chrysler's move makes it possible for people behind the times to get caught up—for which some people some day will be grateful. It could be you.

Chrysler also announces it will make available as optional equipment transistor radios in 1956 Chrysler and Imperial models. Using only 10 per cent as much battery current as conventional auto sets, transistor radios also eliminate the vibrator, rectifier or transformer which account for 85 per cent of radio failures, say they. One problem: Limited transistor production should keep things in tight supply for a while.

American Motors Corp. announces a \$60-million development program which will include a new engine plant and other production facilities in Kenosha, Wis. Already out is tooling for the V-8 expected to replace the engine being purchased from Studebaker-Packard Corp. Production facilities modernization, as well as the new engine plant, are slated for completion within 18 months.

Meanwhile, Ford announces a \$625-million plant and equipment program to cover the next three years. Included, of course, is the new Lincoln assembly plant reported in this column last week. Mercury, completing its first week as a separate division, turned out a record 10,634 cars, while Ford Division's market researcher, R. J. Eggert, observed that the "volume concept" has meant greater profit for auto dealers and lower prices to the customers. The "lower prices" part of it nobody will argue with.

Indicative of the Willys swing to jeeps is the report that sales of "commercial vehicles" are up 79 per cent over the same period last year, while registrations of the industry as a whole declined 2.6 per cent. Just announced also is a school for dealers near Pinckney, Mich. They will be trained in the operation and selling of the Willys jeeps and their attachments.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,026†	672,858
April	930,000*	676,248
May	.....	621,262
June	.....	623,732
July	.....	543,540
August	.....	523,799
September	.....	364,441
October	.....	312,078
November	.....	616,395
December	.....	761,954
Total	6,884,989	

Week Ended	1955	1954
Apr. 2	218,437	146,498
Apr. 9	207,089	152,086
Apr. 16	218,078	148,559
Apr. 23	225,074	157,710
Apr. 30	229,405†	159,206
May 7	225,000*	154,640

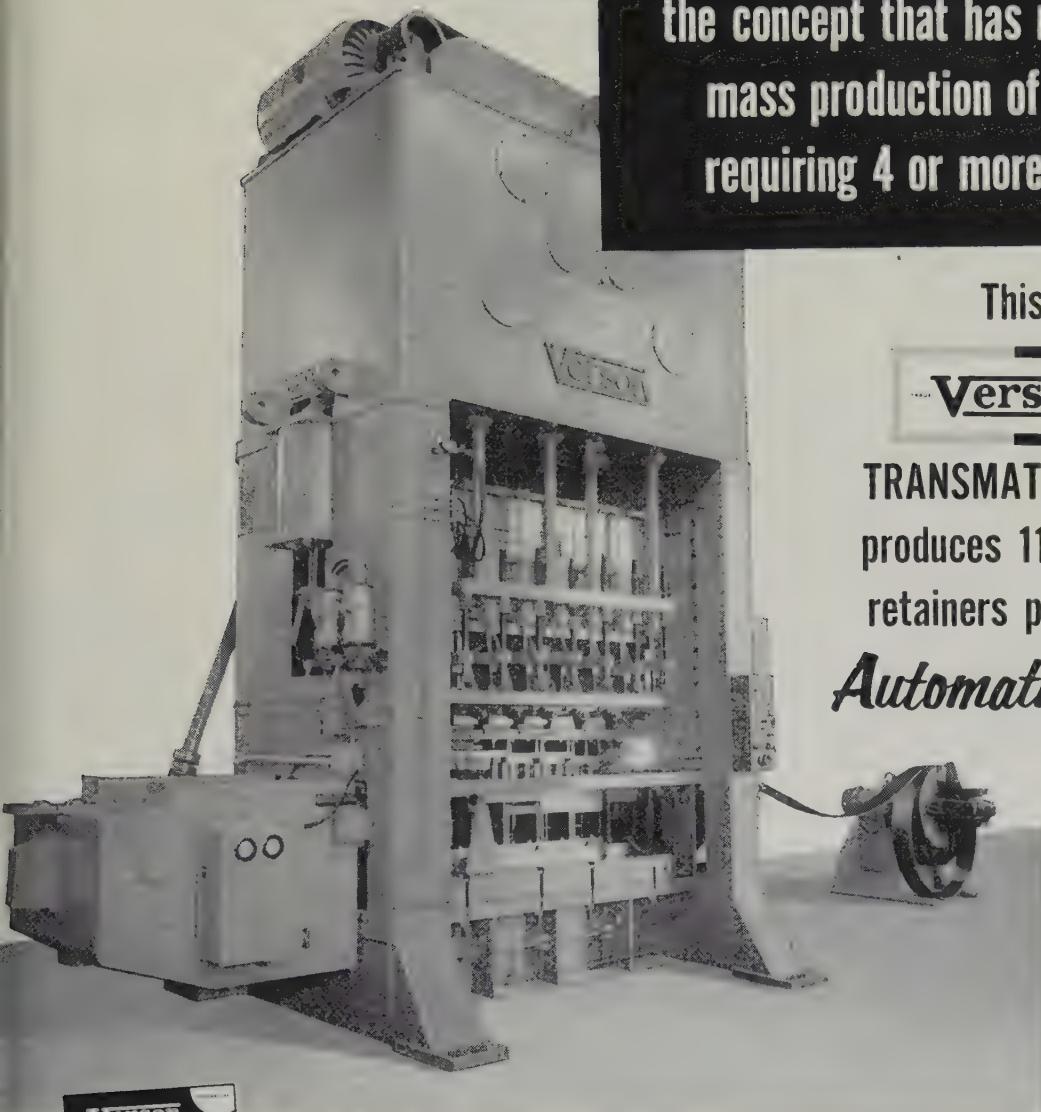
Source: *Ward's Automotive Reports*.

†Preliminary. *Estimated by STEEL.

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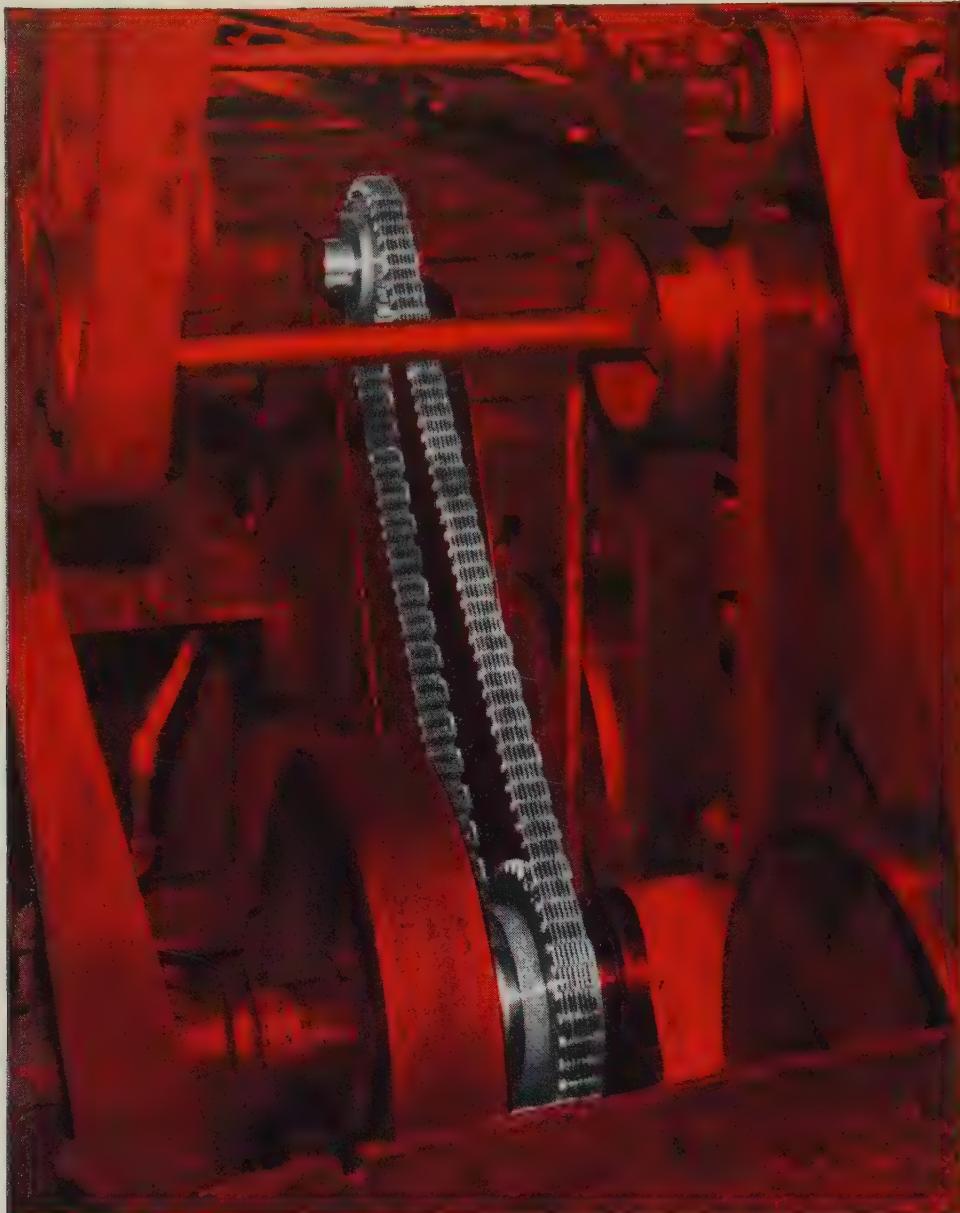
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More power—longer life—less space. Replacing a 14" belt used previously, a Morse HY-VO Drive—1" pitch and 2" wide—is used to pull a 72" heavy-duty lumber edger having Babbitt bearings. transmits 100 HP at 1750 RPM. Normal operating time—9 hours per day, 5½ days per week. Result: greatly improved performance.

While lowering operation costs, the Kurth Lumber Company found that with this HY-VO Drive, they were able to use a much less expensive high-RPM motor; saving critical space in drive width.

How Morse HY-VO Drive 2" wide replaces 14" belt in edger

When the Kurth Lumber Company, of Jasper, Texas, needed a long-lasting, dependable power transmission drive, they turned to Morse HY-VO Drives. Why? Because they found that HY-VO met all their power transmission needs; gave them more power, longer service life, and required less space.

Why don't you check into HY-VO Drives for your own applications? For a compact drive, with quiet operation even at velocities exceeding a mile a minute, you

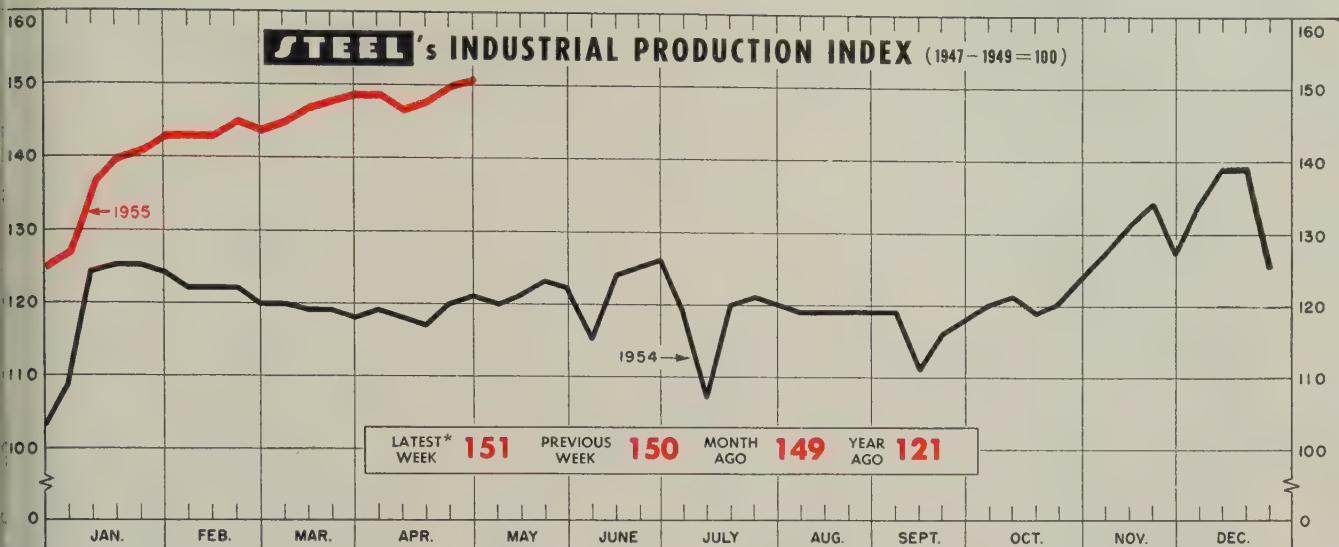
can't beat it. And HY-VO offers less than one per cent friction loss, 50% longer service life, and a reduction in cost per operating hour by as much as 50%.

Write us, today, for more information on how you can benefit and save by using Morse HY-VO Chain Drives. Find out, too, how well Morse Roller Chain, Sprockets, Couplings, Cable Chain, and Clutches can serve you. MORSE CHAIN COMPANY, INDUSTRIAL SALES DEPT., ITHACA, NEW YORK.

MORSE



CHAINS, CLUTCHES,
AND COUPLINGS



Week ended Apr. 30. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Industrial Production Index Hits All-Time High

INDUSTRIAL OUTPUT, paced by steel and autos, hit an all-time high in the week ended Apr. 30 (see STEEL's production index). It may go up another point or two before the current upward surge levels off.

Still rising steel production is one of the reasons for the record. Steel consistently has racked up week-to-week gains since the start of the year. Production of 2,307,000 tons in the week ended Apr. 30 was second highest weekly output in history.

Pace Continues—The American Iron & Steel Institute estimates last week's output at 2,328,000 tons, a new record. The old mark was 2,324,000 tons in the week of Mar. 23, 1953.

Probability of a sharp dropoff is slim. Most companies are confident they will operate at good rates the rest of the year.

Autos Speed—U. S. auto plants, too, are working at a record pace. Combined auto-truck output hit a new weekly high two weeks in a row. No slackening is looked for in May, says *Ward's Automotive Reports*.

The three-millionth car of 1955 came off the lines last Thursday. Truck production is strongest in two years. But after the end of the month, any further record busting depends on what cards

Walter Reuther deals at Detroit conference tables.

Upturn Due—As far as other factors in STEEL's index are concerned: Electric output is in its usual spring dip. An upswing usually comes in June. Freight car loadings are ahead of last year but still under 1953. Coal, coke and ore shipments are showing

considerably more strength than a year ago.

Bustling construction continues. In the latest week reported by *Engineering News-Record* heavy construction contract awards hit \$459 million, the second largest weekly dollar volume this year. The total for the first 17 weeks of this year is \$5.8 billion, 49 per

BAROMETERS OF BUSINESS

INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1000 net tons) ²	2,328	2,307	1,654
Electric Power Distributed (million kw-hr)	9,650 ¹	9,697	8,390
Bitum. Coal Output (1000 tons)	8,600	8,475	1,123
Petroleum Production (daily avg—1000 bbl)	6,830 ¹	6,832	6,622
Construction Volume (<i>ENR</i> —millions)	\$458.5	\$382.8	\$241.1
Automobile, Truck Output (<i>Ward's</i> —units)	229,405	225,074	159,206

TRADE

Freight Car Loadings (1000 cars)	708 ¹	706	648
Business Failures (Dun & Bradstreet, no.)	201 ¹	204	234
Currency in Circulation (millions) ³	\$29,657	\$29,714	\$29,645
Dept. Store Sales (changes from year ago) ³	+10%	-13%	-2%

FINANCE

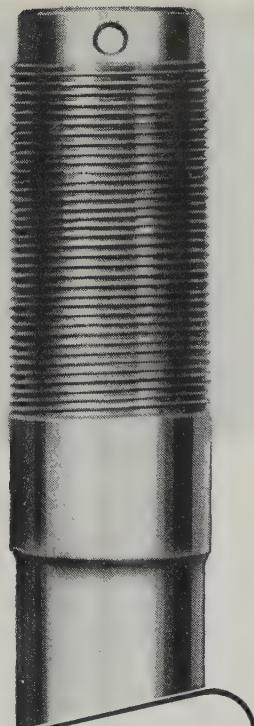
Bank Clearings (Dun & Bradstreet, millions)	\$19,651	\$20,873	\$19,157
Federal Gross Debt (billions)	\$277.0	\$277.0	\$270.1
Bond Volume, NYSE (millions)	\$20.9	\$23.7	\$19.1
Stocks Sales, NYSE (thousands of shares)	12,881	14,473	11,202
Loans and Investments (billions) ⁴	\$84.9	\$84.8	\$78.9
U. S. Govt. Obligations Held (billions) ⁴	\$34.1	\$34.1	\$31.5

PRICES

STEEL's Finished Steel Price Index ⁵	194.53	194.53	189.74
STEEL's Nonferrous Metal Price Index ⁶	237.1	237.3	213.3
All Commodities ⁷	110.4	110.3	111.1
Commodities Other Than Farm & Foods ⁷	115.8	115.8	114.6

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

THE BUSINESS TREND



**WHEN IT'S
Special BOLTS
and STUDS**
Send your Specifications to
ERIE
40 years' experience in
making special bolts, studs,
nuts for specific job
requirements.

Specialists in Precision High Quality
CONNECTING ROD BOLTS

ERIE BOLT & NUT CO.

ERIE, PA.

ONE OF THE

16

INTEGRATED COMPANIES

BARIUM

STEEL CORPORATION

WORKING IN

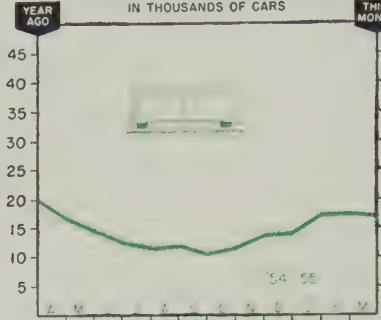
STEEL, ALUMINUM

MAGNESIUM, FIBERGLASS

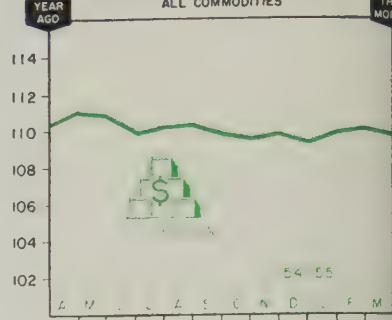
STUDS • BOLTS • NUTS • ALLOYS
STAINLESS • CARBON • BRONZE

REPRESENTATION IN PRINCIPAL CITIES

FREIGHT CARS ON ORDER
IN THOUSANDS OF CARS



WHOLESALE PRICE INDEX
ALL COMMODITIES



	Awards		Backlogs (end of month)	
	1955	1954	1955	1954
Jan.	5,087	2,942	18,395	27,959
Feb.	2,690	2,057	18,633	25,441
Mar.	2,156	348	17,974	20,966
Apr.	.....	909	.....	17,817
May	.....	1,071	.....	15,615
June	.....	1,139	.....	13,860
July	.....	883	.....	12,889
Aug.	.....	2,425	.....	13,013
Sept.	.....	2,396	.....	11,993
Oct.	.....	2,704	.....	12,853
Nov.	.....	3,754	.....	14,805
Dec.	.....	2,655	.....	15,317
Total	.....	23,313	.....	.....

American Railway Car Institute.
Charts Copyright 1955 STEEL.

	1955	1954	1953
Jan.	110.1	110.9	109.9
Feb.	110.4	110.5	109.6
Mar.	110.0	110.5	110.0
Apr.	.....	111.0	109.4
May	.....	110.9	109.8
June	.....	110.0	109.5
July	.....	110.4	110.9
Aug.	.....	110.5	110.6
Sept.	.....	110.0	111.0
Oct.	.....	109.7	110.2
Nov.	.....	110.0	109.8
Dec.	.....	109.5	110.1

U. S. Bureau of Labor Statistics.

cent ahead of 1954 and 13 per cent above 1953's all-time high.

Industry Builds—Current high levels of construction reflect an expansion of industrial and other nonresidential building, which is comparable in scale with the much more widely publicized increase in building, says George Cline Smith, economist for F. W. Dodge Corp.

Building Boasts Broad Base . . .

Contract awards in March for industrial construction in the 37 eastern states totaled \$176 million, an increase of almost 120 per cent over March of last year.

In the first quarter, Mr. Smith reports, industrial awards ran nearly 26 per cent ahead of the same period of 1954. That's the first substantial upturn in the industrial category since it dropped from a peak in 1951.

Predictions generally had the upturn coming in 1956, but it apparently has been moved forward by the rapid improvement in business the last few months.

The rise is not a fluke nor is it confined to one or two large industries, Mr. Smith continues. In March, 17 of the 24 categories of manufacturing buildings reported by Dodge showed increases over

last year. For the quarter, 1 made gains.

Booming construction is reflected in rising sales of building materials—compared with those in the first quarter of last year, they've increased 10 to 15 per cent, says Lawrence Schacht, president of Schacht Steel Construction Inc., New York. Though some structural steel is scarce, Mr. Schacht says: "No builder has to fear any delay because we are keeping schedules and delivery dates as usual."

Business Gains Continue . . .

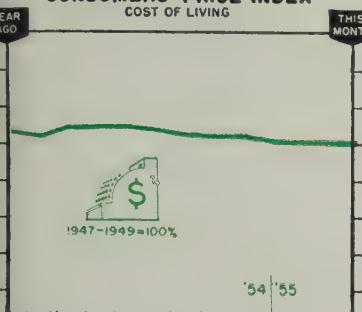
Metalworking trade associations report on improved business: The American Gear Manufacturers Association says volume is up 16 per cent in March over February. The March index is 172.8 (1949 = 100); a year ago, 128.6.

Business in the industrial heating equipment industry continues good, reports Carl L. Ipsen, executive vice president, Industrial Heating Equipment Association Inc. Orders for furnaces and ovens are up 61 per cent over the like 1954 period; for induction and dielectric heating equipment they are up 76 per cent.

First-quarter shipments of r

CONSUMERS' PRICE INDEX

COST OF LIVING

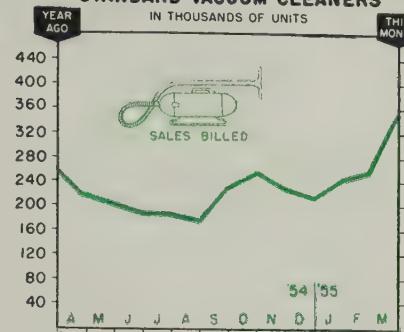


	1955	1954	1953
Jan.	114.3	115.2	113.9
Feb.	114.3	115.0	113.4
Mar.	114.3	114.8	113.6
Apr.	114.6	113.7	
May	115.0	114.0	
June	115.1	114.5	
July	115.2	114.7	
Aug.	115.0	115.0	
Sept.	114.7	115.2	
Oct.	114.5	115.4	
Nov.	114.6	115.0	
Dec.	114.3	114.9	

U. S. Bureau of Labor Statistics.

STANDARD VACUUM CLEANERS

IN THOUSANDS OF UNITS



Sales Billed—Units

	1955	1954	1953
Jan.	250,123	221,233	255,886
Feb.	262,651	199,035	246,007
Mar.	358,179	276,464	329,294
Apr.	220,849	268,548	
May	209,434	252,404	
June	195,781	197,506	
July	193,607	159,446	
Aug.	185,397	188,536	
Sept.	238,235	227,253	
Oct.	263,197	249,383	
Nov.	237,882	216,227	
Dec.	217,022	190,773	
Total ...	2,658,136	2,781,263	

Vacuum Cleaner Mfrs. Assn.

COOPER ALLOY

CORPORATION BRIEFS

• Edited by GEORGE BLACK

CASTINGS ON PARADE

This interesting folder presents a variety of stainless steel cast parts with information as to alloy, weight and application. It contains a complete data chart listing twenty-eight alloys with recommendations for their use.



AIRCRAFT PRODUCTS DIVISION

The COOPER ALLOY AIRCRAFT PRODUCTS DIVISION now under construction at Clark, New Jersey is fast taking shape. It won't be long before it will be turning out the vitally needed jet engine rings at increased production rates and with substantial savings in critical materials such as nickel, and chromium. The latest in methods and equipment have been selected to guarantee high speed, high quality production with minimum waste.



SHELL MOLD FILM AVAILABLE

For those interested in getting a first hand look at shell mold techniques a short film on the subject is available from our technical librarian Prepared by NBC cameramen for the National Association of Manufacturer's "Industry on Parade" television program, the film takes less than ten minutes, but it covers the ground pretty well.



BUY THROUGH DISTRIBUTORS

An interesting discussion on the function of the distributor in modern day marketing and the advantages to the consumer in doing business on a local level are covered in detail in a reprint from SALES MANAGEMENT magazine. Prepared by Cooper Alloy's Distribution Manager, C. L. Heintz, the article is of interest not only to sales managers but to purchasing agents and company executives as well.



COOPER ALLOY
CORPORATION • HILLSIDE, N.J.

sistance welding machines are 16 per cent higher than a year ago, says the Resistance Welder Manufacturers' Association.

The Packaging Machinery Manufacturers Institute states: The backlog of unfilled orders at the first of the year was highest since PMMI began collecting industry figures in 1950.

Laundry Appliances Hit Peak . . .

Factory sales of home laundry appliances in January-March were highest of any quarter in the industry's history. The first-quarter tally, according to Guenther Baumgart, executive director of the American Home Laundry Manufacturers' Association, was: Standard-size washers, 1,081,123 close to the all-time high of the third quarter, 1950; dryers, 338,096, second only to the fourth quarter, 1954; ironers, 24,639, highest since last quarter, 1953.

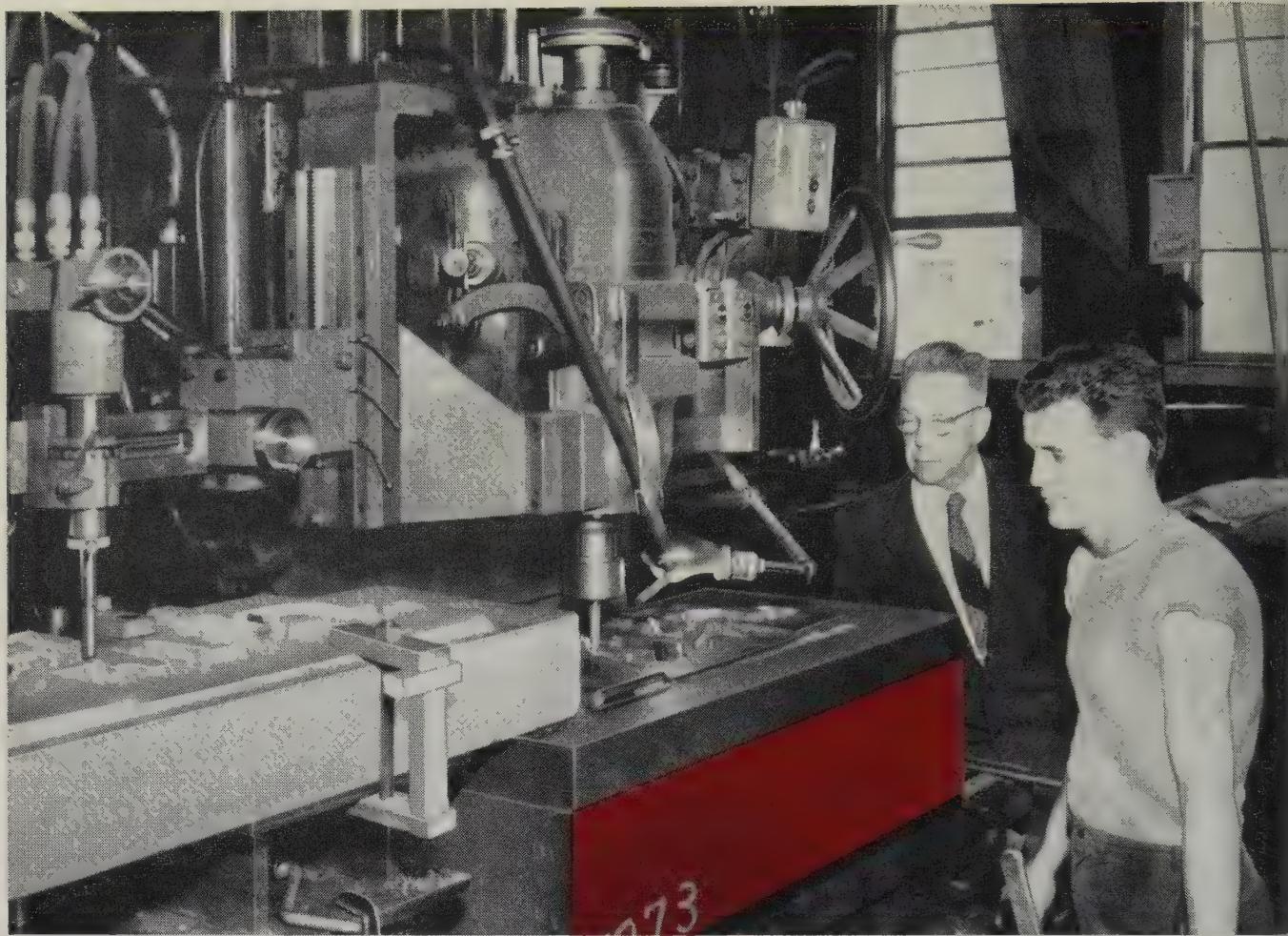
The factory hiring rate in March was up from February by the biggest margin since World War II, says the Labor department. Fabricated metals, machinery and electrical machinery were standouts.

The factory quit rate—sometimes used as an index of the

worker's confidence in his chances of getting another job—also rose. It was most noticeable in industries that have shown a marked production pickup in recent months—primary metals, electrical machinery and transportation.

Trends Fore and Aft . . .

In the building and construction industries, outlays are at a high peak, and Mack units show an increased rate of sales gains, says P. O. Peterson, president, Mack Trucks Inc. Improvement also is noted in the prospects for increased sales of off-highway units . . . Orders received in the first quarter by Baldwin-Lima-Hamilton Corp. were over \$57 million, more than double the same period of 1954, notes M. W. Smith, president . . . New orders in March were at near-record levels. The growing backlog of unfilled orders leads us to believe we will be producing at close to capacity well into the third quarter, reports John M. Curley, chairman, Eastern Stainless Steel Corp. . . . March was the fifth straight record month for business activity in the southern half of California, states the Security-First National Bank of Los Angeles.



precision demands the best material



The dependable quality of Hardtem Die Blocks is famous throughout the die sinking industry. Above is Mr. Larry Loder, owner of the Commercial Die Co., in Detroit. Like so many other experienced die sinkers, Mr. Loder uses Hardtem Die Blocks for the precision work that has earned his company's fine reputation.

That's why users buy and rely on Heppenstall Hardtem Die Blocks—for the consistent performance they can trust.

Here's what Hardtem Die Blocks mean to Better Production!

1. They're tough . . . they resist impact stress.
2. They withstand heat.
3. They are uniform in hardness.

Here's why Hardtem Die Blocks assure better results!

1. They're built of a special patented Heppenstall Steel.
2. They're carefully forged and heat treated to provide the wear resistance for which they are recognized throughout industry.
3. Their quality is under constant study and development by Heppenstall's Engineering and Research staff.

Make Hardtem your standard die block specification. Heppenstall Company, Pittsburgh 1, Pa. Sales Offices in principal cities.



HEPPENSTALL

...the most dependable name in die blocks



ARTHUR J. BUCKLEY
... Pangborn sales manager

Arthur J. Buckley was promoted to sales manager of **Pangborn Corp.**, Hagerstown, Md. He was assistant sales manager.

C. H. Kimmel was elected president, **Ohio Crankshaft Co.**, Cleveland, to succeed **W. C. Dunn**, co-founder and president since 1920, who continues as board chairman. **F. H. Pettay** was made senior vice president and treasurer; **M. J. Hoke**, vice president and general manager of the crankshaft and camshaft division.

Thomas W. Pettus was elected executive vice president of **Scullin Steel Co.**, St. Louis. He was vice president of American Brake Shoe Co., recently assigned to railroad sales, and previously president of National Bearing Division.

Frank A. Phillips was elected vice president-sales and **Arthur W. Reidinger** secretary of **Bay City Shovels Inc.**, Bay City, Mich.

Burton N. Wright was promoted from sales representative to St. Louis district sales manager for **Laclede-Christy Co.**, division of **H. K. Porter Company Inc.**

Mueller Brass Co., Port Huron, Mich., elected **A. C. Dappert** vice president-sales; **Frank M. Levy**, vice president in charge of research; and **Ernest Schleusener**, vice president-manufacturing.



EDMOND A. NEAL
... Nicholson File sales v. p.

Nicholson File Co., Providence, R. I., elected **Edmond A. Neal** vice president-domestic sales. He was domestic sales manager since 1950. Other new officers: **Stanley Livingston Jr.**, vice president-operations; **Charles E. Fogg**, vice president and secretary; **E. Blair LeFevre**, engineering; **Bruce R. Zeiser**, foreign sales; **Hugo Merk**, export manager and **B. J. O'Neill**, assistant secretary.

R. V. Davis was elected vice president in charge of sales, steel grating products division, **Bufnel Co. Ltd.**, Hollydale, Calif. He served **A. O. Smith Corp.** for ten years, most recently as national sales manager, hydraulic products.

Detroit Steel Corp., Detroit, promoted **Howard V. Clark** from sales vice president to executive vice president; **V. R. Bates** from sales manager for strip steel to sales vice president; and **A. D. Brown** from eastern plant manager to vice president in charge of plant operations.

Vincent P. Reinfeld was elected president of **Pyrosil Inc.**, Cuyahoga Falls, O.

Roy C. Ingersoll, president of **Borg-Warner Corp.**, Chicago, assumes the title of president and chairman. The latter post has been vacant since the death of **C. S. Davis** in July, 1954.



JOSEPH H. BASCOM
... president, Broderick & Bascom

Joseph H. Bascom, executive vice president and treasurer, was elected president of **Broderick & Bascom Rope Co.**, St. Louis. He succeeds **C. E. Bascom**, now chairman. **Stanley R. Brenner**, vice president-operations, was elected a director. **A. A. Grosse**, secretary and assistant treasurer, was made secretary-treasurer.

Roger E. Gay, president, was elected chairman of **Bristol Brass Corp.**, Bristol, Conn., and given a leave of absence to serve as director of the division of cataloging, standardization, inspection and quality control in the office of the assistant secretary of defense (Supply & Logistics), Washington. Mr. Gay succeeds as chairman **C. T. Treadway Sr.**, who continues a director. During Mr. Gay's absence, the executive committee and board of directors will direct Bristol Brass, with **Joseph O'Brien**, vice president and general superintendent, as operating head.

E. F. Blades, production manager at **Rheem Mfg. Co.'s** Houston plant, was promoted to works manager. **B. J. Gilliam** was promoted from acting plant engineer to plant engineer.

Harold M. Schudt was elected president, Canadian **Allis-Chalmers Ltd.**, Montreal, Que., to succeed **Mark C. Lowe**, resigned. The general machinery division of Allis-



RICHARD R. DEAS JR.
... Hamilton Foundry v. p.



HOWARD S. BUNN
... Union Carbide executive v. p.



FRANK L. MAGEE
... Alcoa executive v. p.

Chalmers Mfg. Co., the parent firm, is in charge of the Canadian operation.

Richard R. Deas Jr., works manager, was elected to the new office of vice president, **Hamilton Foundry & Machine Co.**, Hamilton, O. He now serves in both capacities.

Pyle-National Co., Chicago, elected **William C. Croft** president to succeed **Harold V. Engh**, who resigned but remains a director. Mr. Croft was executive vice president. He also was elected a director to succeed **Donald S. Boynton**, retired.

Harold V. Engh was elected president and chief executive officer of **Turner Brass Works**, Sycamore, Ill. He succeeds **John Slezak**, resigned. Mr. Engh was executive vice president of Anaconda Wire & Cable Co. before becoming president of Pyle-National Co., Chicago, eight years ago.

Harry C. Stanton joined **Robert H. Newton Co.**, Cleveland, as a manufacturers' representative for forgings, castings and springs. He was with **Hamilton Steel Co.**

Lincoln Engineering Co., St. Louis, elected **Carl H. Mueller** vice president-engineering and **John E. Renner** vice president-sales. Mr. Mueller was engineering director; Mr. Renner, general sales manager.

Stanley R. Rich was made technical director of **General Ultrasonics Co.**, Hartford, Conn.

Howard S. Bunn was elected executive vice president and member of the executive committee of **Union Carbide & Carbon Corp.**, New York. He was vice president and became a director in 1954. **Dr. Augustus B. Kinzel** was elected vice president-research to succeed **Dr. George O. Curme Jr.** who remains a director.

American Smelting & Refining Co., New York, elected **R. Worth Vaughan** executive vice president and **Oscar S. Straus** vice president and treasurer. Mr. Vaughan, former vice president, continues as general counsel and as a director of the company.



R. WORTH VAUGHAN

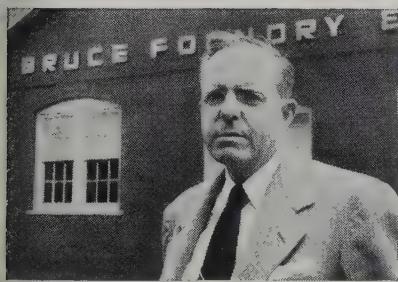
... promotions at American Smelting & Refining



OSCAR S. STRAUS

Bruce Foundry reports on 13 years' operation

"BETTER CASTINGS FROM BETTER CORES WITH CITIES SERVICE CORE OIL"



PRESIDENT WILLIAM J. BRUCE is high in praise for Cities Service Core Oil. Says it prevents premature collapsing, eliminates sticking, permits minimum smoke and offers absolute uniformity. Great in every respect.

Located in Tecumseh, Michigan, Bruce Foundry and Mfg. Co. has a melting capacity of 30 to 40 tons per day. For many years Bruce has turned out top-notch castings for refrigeration and automotive hydraulic equipment.

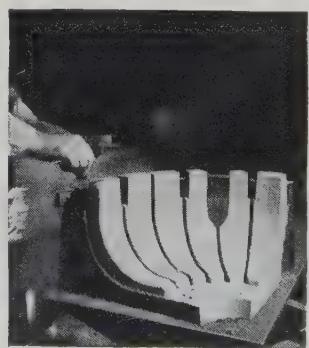
And for thirteen of those years, Cities Service Core Oil has been a major factor in the quality and rapidity of Bruce's work. Probably no one is better qualified to comment on this oil than President William J. Bruce. Here's what he

says: "One of the biggest reasons I can think of for recommending Cities Service Core Oil is its absolute uniformity. This we have discovered in every single order for 13 years. As for foundry performance, I don't think there's a better oil. It has high hot strength preventing premature collapsing, yet collapses rapidly at the right time so that sand doesn't have to be dug out of castings. In addition, it eliminates sticking and permits minimum smoke."

If you'd like to learn more about the oil Mr. Bruce praises so highly, talk to a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N.Y.

CITIES SERVICE
QUALITY PETROLEUM PRODUCTS

AFTER REMOVAL FROM CORE BOX, sand core gets attention from skilled technician at Bruce Foundry. Firm makes castings for automotive and refrigeration hydraulic equipment, has used Cities Service Core Oil for 13 years.





JAMES C. BLACK

... Reynolds reduction div. mgr.

Guilford Foundry Co., Greensboro, N. C. Mr. Grover was purchasing agent at Slinger.

James C. Black, general manager of the eastern reduction division of **Reynolds Metals Co.**, was made general manager of the company's reduction division. He has headquarters in Richmond, Va.

Dr. Harold M. Sonnichsen, director, technical division, and a board member of **Permacel Tape Corp.**, New Brunswick, N. J., was elected a vice president.

Stanley M. Proctor Co., Cleveland, appointed **Harry W. McCracken** district sales engineer.

Samuel B. Weiss succeeds **A. W. Nathan**, retired, as president and treasurer of **Detroit Steel Supply Co. Inc.**, Albany, N. Y.

Thomas I. Stephenson Jr. was named manager of Tennessee operations for **Aluminum Co. of America** at Alcoa, Tenn. He succeeds **Ralph M. Ferry**, retired.

OBITUARIES...

Claude B. Schneible, 63, president, **Claude B. Schneible Co.**, Detroit, died Apr. 15.

W. Clement Boren Jr., 63, chairman of **Carolina Steel & Iron Co.**, Greensboro, N. C., died Apr. 24. He also was chairman of Salem



WALTER F. SHEETZ

... president, **R. C. Mahon Co.**

Walter F. Sheetz, executive vice president and sales manager, was elected president, **R. C. Mahon Co.**, Detroit. **R. C. Mahon**, founder and president of the company for 43 years, was elected chairman.

Howard C. Liebing was made sales manager of **National Tube Co.**, Cleveland. He was production control manager.

Julius C. Hydrick was made works manager, **Quaker Rubber Corp.**, Philadelphia, division of **H. K. Porter Company Inc.** He was works manager at Quaker from June, 1950, until November, 1951, when he was transferred to another Porter Division, Delta-Star Electric Co., Chicago, as works manager.

W. J. Brigham replaces the late **Harry Lilley** as Detroit district sales manager of **Timken Roller Bearing Co.** **John J. McGrann** fills Mr. Brigham's post as district manager at Cincinnati. **Ralph Preston** succeeds Mr. McGrann as Houston district manager.

Steel Co., Winston-Salem, N. C.

Gordon W. Cameron, 60, vice president-treasurer, **Aluminum Co. of America**, Pittsburgh, died Apr. 29.

Harold M. Chapman, 55, president, **Caldwell & Ward Brass Co. Inc.**, Syracuse, N. Y., died Apr. 22.

Robert C. Woodward, 68, retired



ROY F. SCHUMACHER

... Bethlehem Pacific sales post

Roy F. Schumacher, sales engineer at **Bethlehem Pacific Coast Steel Corp.**'s Los Angeles office, was made manager of sheet and tin plate sales. He has headquarters in San Francisco.

Cummins Engine Co. Inc., Columbus, Ind., elected **E. D. Tull** executive vice president; **R. B. Stoner**, vice president-personnel; **C. R. Boll**, vice president-sales; and **P. J. Every**, general sales manager.

Edgcomb Steel & Aluminum Corp., Hillside, N. J., elected **George L. Tillson** chairman and chief executive officer. He is succeeded as president by **Harry L. Edgcomb**, former vice president-sales.

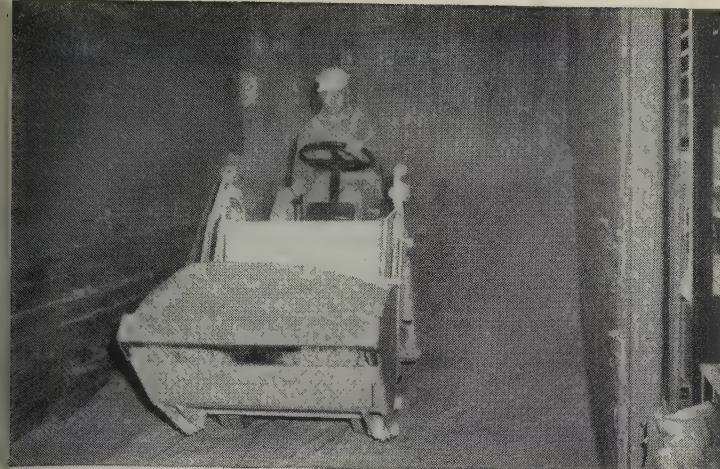
William O. Sweeny was elected vice-president-sales, **Arwood Precision Casting Corp.**, Brooklyn, N. Y.

George M. Colvill was made manager of the grating, welding rod and equipment division, **Tygart Steel Division**, Alton Inc., Mc-Keesport, Pa. **H. W. Stacy** is office sales manager.

chief metallurgist for **Bucyrus-Erie Co.**, Milwaukee, died Apr. 20.

Carl F. Mayer, 59, president, **Carl A. Mayer Corp.**, Cleveland, died Apr. 20.

G. A. Grader, 55, president, **Bedford Tool & Forge Co.**, Bedford, O., died Apr. 25.



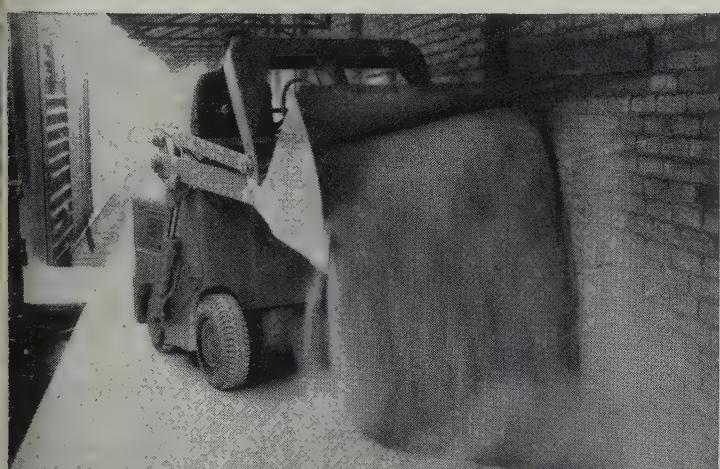
Shortest Turning Radius

AT FARM BUREAU SERVICE, Clark's Y-20 Scoop rolls into boxcars to handle fertilizer. With the shortest turning radius of any machine on the market, a tight 71 inches, the Y-20 is unbeatable for handling packed material in cramped quarters. See for yourself . . . ask for a demonstration.



Full 60" Dumping Clearance

AT AMERICAN MARSH PUMP, the Y-20 Scoop shovels molding sand into shaker. Here's clean-up-ability . . . close scraping of floors, corners and sides. The Y-20 Scoop has plenty of reach for high hoppers, has a 60" clearance under the lip, will easily dump into bins and hoppers 86" high. See an "action" demonstration.



Full Bucket Loads Every Time

AT ALLIED PAPER MILLS, clay is handled 17% faster with Clark's Y-20 Scoop. Low-level hydraulic tilt-back guarantees full bucket loads every time, permits carrying in lowered position without spillage. There's plenty of power, plenty of traction—fully loaded, the Y-20 Scoop will climb a 14% grade. Ask for a demonstration.

*Dollar for dollar Clark's New Y-20 Scoop will outperform anything in its field.
Ask for a demonstration!*

Industrial Truck Division, CLARK EQUIPMENT COMPANY, Battle Creek 26, Michigan

A BETTER BUY WITH LOCAL SUPPLY—*Genuine Clark Parts*

CLARK
EQUIPMENT

Treadwell



Temper or skin pass and cold rolling mills for high carbon, stainless and carbon steel strip complete with coiling equipment.

Manipulators, Mill, etc.

Mills, Blooming & Billet

Mills, Merchant & Bar

Mills, Rod

Mills, Sheet

Mills, Strip (Cold)

Mills, Strip (Hot) & Skelp

Mills, Vertical Edging

Tables, Mill

Tables, Tilting & Lift

Tables, Transfer

Transfers

Coilers & Reels

Conveyors, Coil

Drives

Ejectors, Furnace

Gauges, Shear, Saw, etc.

Beds, Cooling

Beds, Inspection

Bumpers, Furnace

Pushers, Furnace

Repeaters

Handling Equipment (Kick-offs, Pillers, Cradles, etc.)

Steel and Iron Castings

Ni-Hard and Ductile Iron Castings



Treadwell Engineering Company

EASTON, PA.

SALES AND ENGINEERING OFFICES:

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CHICAGO 4, ILL.
CEntral 6-9784

140 CEDAR STREET
NEW YORK 6, N. Y.
WOrth 4-3344

1015 FARMERS BANK BLDG.
PITTSBURGH 22, PA.
ATlantic 1-2883

Plans To Build Foundry

Many operations of Chambersburg Engineering Co.'s new facilities will be mechanized

CONSTRUCTION of a large iron foundry has been started by Chambersburg Engineering Co., Chambersburg, Pa., to replace facilities which have been in operation since 1906. Production is expected to be shifted to the new building (without interruption in schedules) in October.

The new foundry's monthly capacity will be the same as the present one—750 tons. Part of the castings will be used in the manufacture of the company's forging equipment, with the remainder available to serve the needs of a growing number of casting customers.

Improved facilities will permit the economical production of 1000 to 60,000-lb castings. Present cement-bonded, sand-molding and coremaking methods will be used.

Mechanization—Many operations of the new foundry will be mechanized. Practically all foundry materials will be handled with electric trucks or conveyors. All melting will be done in cupolas, with melt materials weighed and handled mechanically.

All production operations will be performed in one bay, which will be served by one 60-ton and one 30-ton bridge crane and four 5-ton gantry cranes. Sand from shakeout and cleaning operations will be reclaimed and returned to storage by conveyor.

The new building will contain 48,000 sq ft of floor space. Adjoining facilities will include a large pattern shop and a 20,000-sq-ft yard storage area. It will be covered by a 10-ton bridge crane to handle materials and equipment.

Will Build Titanium Plant

Columbia - Southern Chemical Corp., Pittsburgh, will construct a multimillion-dollar, titanium tetrachloride plant at Natrium, W. Va. To be near the firm's chlorine and caustic soda plant, its construction will commence soon. Partial production is scheduled for April, 1956; capacity production, three

months later. During World War II, Columbia-Southern provided commercial quantities of titanium tetrachloride to the government for military purposes.

Vickers Erecting Building

Vickers Inc., Detroit, is erecting a 150,000-sq-ft building to house engineering facilities, some executive and sales offices. Included is a research and development laboratory. Vickers builds oil hydraulic pumps, motors, cylinders and controls.

Bearings Producer Expands

Miniature Precision Bearings Inc., Keene, N. H., will triple production space by erecting a 50,000-sq-ft, air-conditioned plant. The project will be completed this summer.

White Motor Forms Division

White Motor Co., Cleveland, established a Special Products Division to handle the development and manufacture of a diversified line of nonautomotive products. Kenneth F. Ode, manager of government contracts, was appointed general manager of the division.

Los Angeles Firms Merge

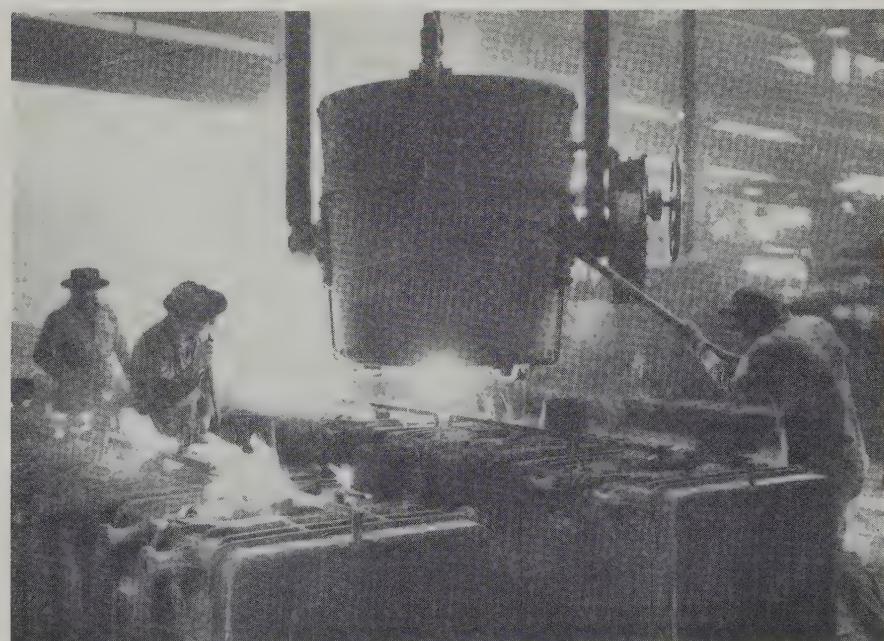
American Electronics Inc., Los Angeles, acquired Pierson Electrical & Engineering Corp., that city. Pierson makes miniature, direct-current motors and generators and develops miniature power supply units for missile programs and electronic systems in the atomic energy field.

Ore Handling System Installed

E. J. Lavino & Co., Philadelphia, will install an ore handling system for unloading, storing, bedding and reclaiming ore for its stack at Sheridan, Pa. The system will be designed by Jay J. Seaver Engineers, Chicago.

Nottingham Steel Buys Firm

Nottingham Steel Co. purchased Cardinal Steel Supply Co. Both are Cleveland firms. George P. Lenz Jr., formerly president of Cardinal, has been appointed manager of flat-rolled sales for Nottingham in Cleveland. S. J. Sunday Jr., formerly sales manager of Cardinal, has joined Nottingham's sales staff. E. B. Crile will manage the Cardinal Steel Division as well as supervise Nottingham's



West Coast Foundry Puts Accent on Automation

General Metals Corp. is operating its new, \$5-million foundry in Oakland, Calif. Designed to reduce labor costs, achieve faster, more efficient and higher quality production, it incorporates the utmost in mechanization. Versatility of production is assured by the layout of the plant, which permits a wide variety of work. Molds are shown being poured from a bottom-pour ladle

flat-rolled operations in Chicago, Detroit and Cleveland.

Wine To Flow in Cans

Canned wine will be marketed nationally beginning this summer, says Yosemite Winery Association, Madera, Calif. The container will be wax-lined, and cap topped. It was developed by Continental Can Co. Inc., New York.

GM Division Enters New Field

General Motors Corp.'s AC Spark Plug Division, Flint, Mich., has entered a new field—the design, development and production of jet engine control systems. Present work concerns controls for afterburners on several types of aviation engines. The project is concentrated in a recently leased building at 431 W. Florida St., Milwaukee. AC's main Milwaukee plant is at 1925 E. Kenilworth Place.

Revere Installs Aluminum Mill

Revere Copper & Brass Inc., New York, is installing a 4-high, 36-in., cold-rolling aluminum mill in its Canton, Md., plant. A number of supplementary auxiliary items are being added, including three additional natural-gas-fired furnaces for the heat treatment of aluminum. The mill is scheduled for operation by the Baltimore Division this fall.

Climax Realigns Sales Setup

Climax Molybdenum Co., New York, completely realigned and expanded its sales department. The reorganization entails the creation of three new domestic divisions, including direct sales, metallurgical market development and chemical market development. Reuel E. Wariner, vice president in charge of sales, says the program was undertaken to bring about a closer coordination of the over-all sales effort of the company and to provide greater and more complete commercial and technical customer services. It also takes into account the increasing spread of various forms of molybdenum into other

than metallurgical applications, as well as the advancing use and expanding technology of molybdenum as a base metal and alloying material.

To Distribute Magnesium Items

Brooks & Perkins Inc., Detroit, appointed Continental Metals Inc., Los Angeles, as warehouse distributor for magnesium mill products.

Arrow Needle Boosts Capacity

Arrow Needle Co., a subsidiary of Textile Machine Works, Reading, Pa., is building another plant at Manchester, N. H., increasing its floor space from 17,000 to more than 27,000 sq ft.



The Northern Ohio Chapter of the American Steel Warehouse Association, Cleveland, elected officers for 1955-56: President, G. H. Kuhnle, Peninsular Steel Co.; vice president, W. R. Holmes, U. S. Steel Supply Division, U. S. Steel Corp.; secretary-treasurer, W. H. Peterson, Republic Structural Iron Works; chapter director, A. D. Messner, Betz-Pierce Co., all of Cleveland.

American Society of Civil Engineers, New York, named W. H. Wisely executive secretary. He succeeds Col. W. N. Carey.

The American Iron & Steel Institute, New York, will stage its 63rd general meeting at the Waldorf-Astoria hotel, that city, May 25-26. At the opening session, the Charles M. Schwab Memorial Lecture will be delivered by Dr. L. A. DuBridge, president, California Institute of Technology, Pasadena, Calif. Technical and public relations sessions are scheduled for the afternoon. Addresses at the May 26 morning session will be delivered by Max D. Howell, executive vice president of the institute; Arthur B. Homer, president, Bethlehem Steel Co., Bethlehem, Pa.; and Claude Robinson, president, Opinion Research Corp.,

Princeton, N. J. The industrial relations session is scheduled for the afternoon and the annual dinner for the evening.

Granville M. Read, chief engineer, E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., received the ASME medal, at the spring meeting of the American Society of Mechanical Engineers, New York.



City Steel Co., Baltimore, an ornamental ironworks, is moving into larger quarters at 1446 Stevenson St., Baltimore, Md.

The eastern regional sales office of Alloy Tube Division, Carpenter Steel Co., is now at the division's home office and mill in Union, N. J. The office was in Newark, N. J. Paul E. Kelly continues as eastern regional sales manager. It was stated incorrectly in the Apr. 25 issue of STEEL that the parent company's eastern regional sales office had been moved.

Marine Electronics Inc., manufacturer of electrical specialties, moved into larger quarters at 1510 Guilford Ave., Baltimore, Md.

Eastern Metal Products Corp. opened its executive offices and display rooms at 18 E. 41st St., New York 17, N. Y.

Insul-Mastic Corp. of America is transferring its home office from Pittsburgh to its plant, 7750 W. 61st Place, Summit, Ill.

West Metal Works Inc. is moving to 191-205 Dutton St., Buffalo, N. Y., as part of a \$100,000 expansion program. New rolling and shearing equipment is being installed in the plant.

U. S. Industries Inc. announces that its New York and Chicago executive offices are now located at 250 Park Ave., New York, N. Y.

National Machine Tool Builders' Association moved to 2071 E. 102nd St., Cleveland 6, O.



A pencil pokes through this corroded metal! Why chance trouble like this? Cathodic Protection and Anaconda Type CP Cable effectively check corrosion of buried metals.

CHECK CORROSION by cathodic protection with Anaconda Type CP Cable

Corrosion of buried metals costs industry over a *billion dollars a year!*

But most of this can now be prevented—by Cathodic Protection.

Corrosion—caused by minute electric currents flowing from metal into adjacent soil—is checked by applying direct current from an external source. This eliminates anodic areas, makes the entire metal surface cathodic and stops the flow of current from the metal.

But moisture, oil, acids and alkalies

* Reg. U. S. Pat. Off.

often found in corrosive soil areas are tough on cable.

Because of our many years of experience with buried cable, Anaconda has been able to produce a new Type CP cable — specially designed with double jacket of polyethylene and Densheath* (PVC) — to resist these enemies of cable life. This means less replacement... major savings in both labor and material costs.

Would you like more information on how Cathodic Protection checks

corrosion?...and detailed information on Anaconda Type CP Cable? Ask the Man from Anaconda — or send for bulletin DM 5450, "Anaconda Cathodic Protection Cable." Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

55340

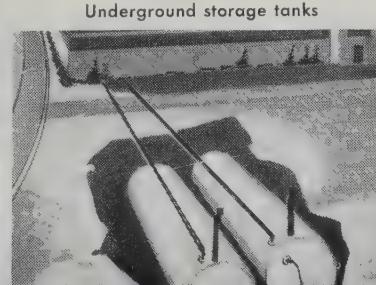
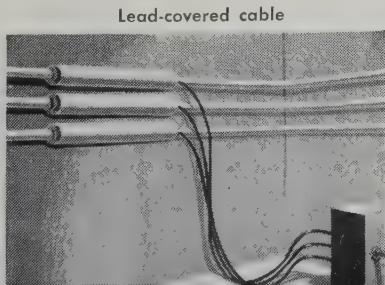
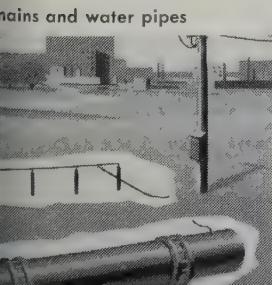
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COPPER AND ALUMINUM
WIRE AND CABLE

Where Anaconda Type CP Cable and Cathodic Protection Cut Corrosion Costs.

Lead-covered cable

Underground storage tanks

Transmission towers



McGILL BEARING BRIEFS

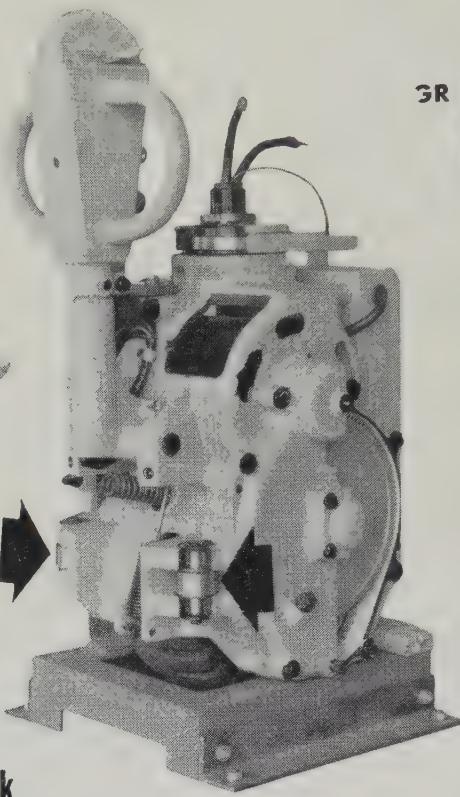


Sealed **GUIDEROL®**
bearings meet design
demands of Clark
POWRWORKER hand truck

The power head in Clark Equipment Company's Powrworker trucks required a bearing to provide radial support to the wheel-mounted pivoting drive unit. In addition it had to seal out dirt, carry a sizeable load in limited space and adapt to vertical mounting. Sealed GUIDEROL bearings meet each of these requirements.

For instance, the bearings are only $4\frac{1}{2}$ inches above the floor and in contact with contaminating materials such as dirt, chemicals and brine that would freeze up ordinary unsealed bearings. Use of the Sealed GUIDEROL bearings eliminates the need for multiple parts and extra machining of the housing that would be required with auxiliary sealing of an ordinary bearing.

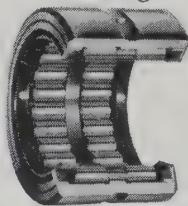
Although limited in size by the fit of the unit into the truck, the GUIDEROL SG Bearings take loads up to



1,500 pounds in absorbing starting and stopping inertias of the truck and the unit.

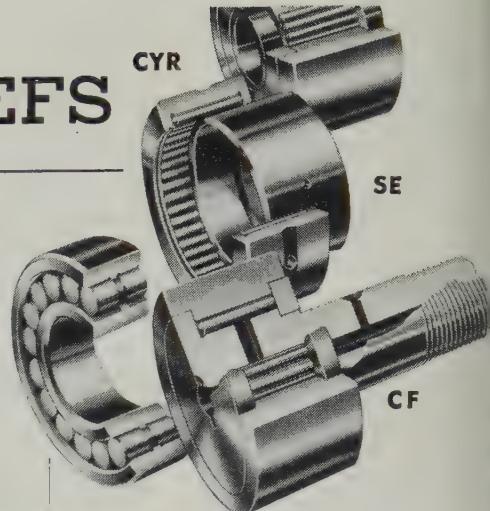
The SG Series bearings operate perfectly and last longer in vertical mounting because the center guided construction provides a guide rail that keeps the grooved rollers in alignment under any load from vertical to horizontal. They are available with built-in single and double seals with no increase in standard Guiderol bearing width.

To help insure product performance and to simplify production and assembly, investigate Sealed GUIDEROL Bearings today.



FOR YOU

Complete details on the Sealed GUIDEROL Bearing are contained in McGill Catalog No. 52. Send for a copy today.



**SIKORSKY USES SEALED
GUIDEROL® BEARINGS in
HELICOPTER ROTORS**



An obvious "must" for helicopter rotors is dependability. McGill Sealed GUIDEROL Bearings help to provide that dependability as drag hinge and flapping hinge bearings in the main and tail rotors of the Sikorsky S-55, helicopter series.

**SEALED GUIDEROL® BEARINGS
BRING NEW LATITUDE in
DESIGN to
SCOTT-ATWATER
MOTORS**



Used as crankshaft support in the new Scott-Atwater Bail-a-matic outboard motor line, Sealed GUIDEROL bearings give more positive seal retention, make higher operating speeds possible, give greater capacity for future horsepower increases, and simplify assembly.

Insure performance with **McGILL®**...

MULTIROL® - GUIDEROL® - CAMROL full type roller bearings



McGILL MANUFACTURING COMPANY, INC., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

May 9, 1955

Technical Outlook

LEAD-ZINC SITUATION—For domestic lead and zinc producers, 1954 was the worst year since before World War II, but on a world-wide basis a new consumption record was established—and production exceeded consumption. U.S. consumption of both metals, compared with former years, was at a level considered satisfactory. Overexpansion of production during the Korean conflict created the oversupply, and the effects are still being felt, though 1955 should bring a definite upswing.

EXPANDING—The Steel Founders' Society is working on a method to make low carbon steel castings in shell molds. First plant tests, just completed, look promising.

INDUCTION GIANT—Biggest low - frequency induction heater built by Magnethermic Corp. will handle magnesium billets or rectangular slabs up to 32 in. in diameter by 71 in. long. It is rated at 2000 kw, (operates on 4160 v, 3 phase, 60 cycles) and will heat 10 tons of magnesium an hour. Eight freight cars were needed to ship it to Madison, Ill.

INSIDE EYE—Even former platoon sergeants will be surprised by the latest task for the wartime snooperscope. Being used to reveal the internal structure of metals by infrared radiation, it sees right through a silicon ingot several inches long, picking up contaminants, strains and crystal imperfections.

CUTS WEIGHT—An atomic reactor design that more than halves the weight per horsepower of conventional reactors and eliminates many moving parts is proposed by General Electric. The liquid metal reactor is nested inside a cylindrical heat exchanger. This eliminates

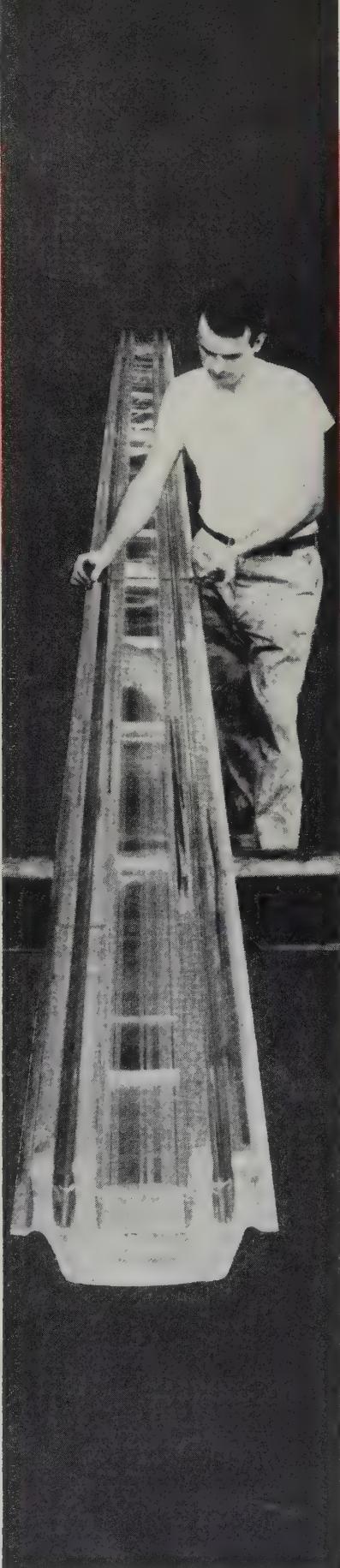
the separate heat exchanger used to convert water into steam to drive turbine generators. It also does away with a lot of piping and valves. There is less open space, which must be shielded to protect personnel from radiation.

POROUS METAL—Sheet aluminum with pores as small as 5 microns or as large as 150 is available in experimental quantities from Micro Metallic Corp., Glen Cove, N. Y. It's made by powder metallurgy techniques, and should find use as a filtration and gas-dispersion medium in chemical, aircraft and atomic energy fields.

TITANIUM ETCH—Alkaline chemical milling is being used by North American Aviation Inc. to remove scale from titanium alloy forgings. The etch rate is controllable, making it possible to forge oversize, then bring parts to final dimensions by chemical cutting.

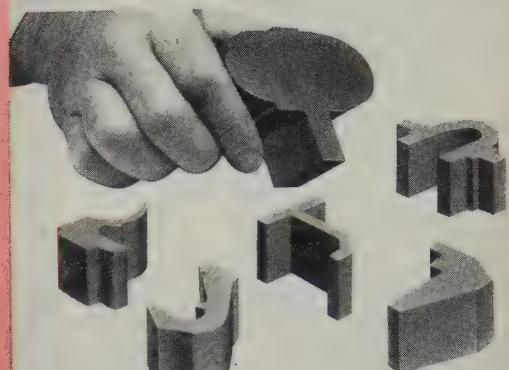
NONSTRATEGIC ALLOY—Thermenol is ready to go to work. Duraloy Co. of Scottdale, Pa., will make and market the Naval Ordnance development. It's a 16-Al, 3.5-Mo, Fe alloy with excellent resistance to oxygen and sulphur at high temperatures, high electrical resistance and excellent magnetic properties. Because its density is 15 to 20 per cent lower than most stainless steels, it ought to have numerous aircraft applications. STEEL gave details on Thermenol on Aug. 2 last year, page 88.

BOLT CORROSION—Electrical measurements in the laboratory can predict the corrosion rates of bolts used in underground structures, says the National Bureau of Standards. Some bolt materials can be protected against corrosion by making them cathodic to the structures they fasten.



By ROBERT M. LOVE
Pittsburgh Editor

Variety is the spice of extrusion. Extruded shapes in carbon steel (left), stainless and high alloy steels (center) and aluminum alloy (right)



Extrusions Put Squeeze on Costs

Here's metal that comes from the mill in shapes close to finished-part dimensions. Think of the gains in lower scrap loss, less machining time. The try-it-out cost is low.

A SUGGESTION to substitute extruded aluminum for rotor wedges instead of machining them from bar stock won a worker \$4000—the largest award paid by Westinghouse Electric Corp. in 1954.

The idea isn't unique. Industry in general is switching to extrusions to save machining dollars. Further: Parts are being redesigned to cash in on the advantages of the process: Low cost, fast delivery, superior physicals and shapes dimensionally close to the cross section of the finished product.

Rising Star—Last year, the tonnage of aluminum extrusions shipped topped shipments of aluminum castings for the first time. The growth was termed "startling," by Alcoa officials, prompting predictions that more extrusion presses will be installed.

Tailor-made shipments of extruded steel are coming from mills which once specialized in blooms, billets and slabs. An understanding of fabricators' requirements started this trend.

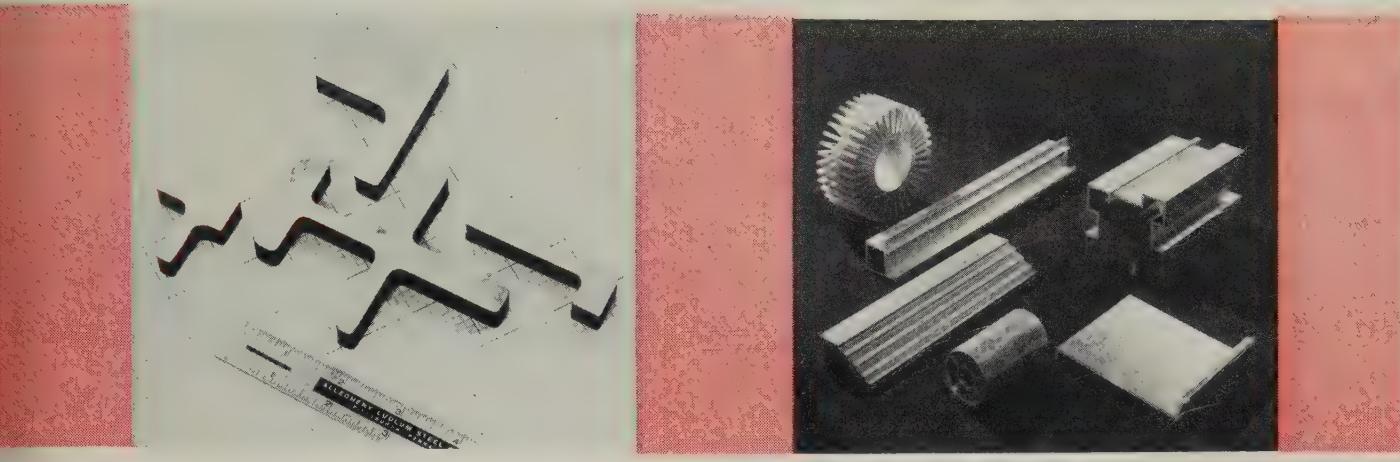
Extrusion's range is tremendous—from decorative trim to structural shapes like this husky aluminum aircraft member extruded by Alcoa

Magnesium also shares in the demand for tailor-made metal. "Extrusions give the fabricator wide latitude in planning special sections," Dow Chemical Co. points out. Units once assembled in sections and joined by fasteners can be extruded in one piece.

Hot Squeeze—Extruded shapes are produced by slowly forcing billets through a steel die under hydraulic pressure. Extrusion temperatures for aluminum range from 650 to 950° F., depending on the alloy. Steel must be extruded at 2100 to 2300° F.

High temperatures and pressures on dies (four to five times greater than those required for aluminum) delayed development of steel extrusion. After World War II, the French Ugine-Sejournet process made possible the economical extrusion of hollow and solid sections. Using this process, the tube division of Babcock & Wilcox Co. launched the extrusion of high alloy tube in January, 1952.

B & W now is far beyond the French fundamentals. Die desi-



ingot heating and presses are improved.

Competition—Allegheny Ludlum began operating a hot extrusion plant for making stainless steel seamless tube early in 1953.

Extrusion eliminated the need for conditioning inside surfaces after hot-piercing the tube. Quality improved. The greater flexibility of extrusion meant that the cold-drawing department could choose from a dozen sizes rather than four or five. Realizing that hot extrusion offered special advantages to customers, the company soon branched out into extruded shapes.

In June, 1954, it began taking production orders for extruded stainless shapes.

Similar Decision—Shortly after that, Jones & Laughlin Steel Corp. announced its entry in steel extrusion, and turned out its first hot shapes of carbon and alloy steel in February, 1955. "We see untold possibilities for extruded sections," says a J&L sales manager.

These glowing predictions herald the taking of a big step nearer steel consumers' needs. Aluminum producers had already taken it and sales were mounting. Now steelmakers asked: "What will the growth of steel extrusion mean to producers and consumers?"

Saving Time, Cost—Main advantage for steel users lies in eliminating the time and cost of machining and finishing. Extruded shapes can slash scrap losses and save valuable material. Lower tool cost follows. Extrusions may fur-

nish shapes more intricate than those produced by rolling.

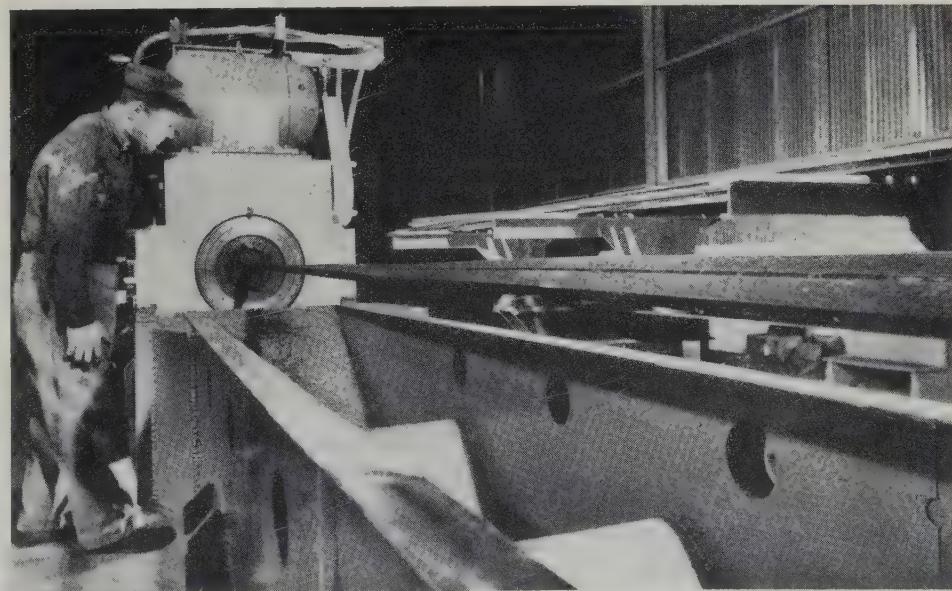
At the extremes, extrusion can produce tube in "unpierceable" alloys, reports B&W. That firm extrudes commercially pure titanium for heavy-duty applications such as aircraft. Zirconium and pure molybdenum can also be extruded.

Allegheny Ludlum adds: "Hot extrusion is especially helpful in the production of small amounts of special products. A rolling mill may lose production time in changing roll setups for orders below 10 tons." New shapes in small quantities are not economical when rolled. Added to the cost of producing minimum quantities is the expense of cutting new roll passes.

Concrete Savings—A producer of rings for aircraft gas turbines used to machine his products from a rectangular bar which was rolled and welded into a ring. Machining removed as much as 80 per cent of the metal. With extruded shapes, the ring is still rolled and welded, but sizing and machining are simple. Most of the metal has been removed in the extrusion.

An aircraft engine shroud manufacturer was machining a rectangular, stainless-steel bar weighing 20.4 lb per ft to a part weighing less than eight lb per foot. Extrusion furnished a shape weighing 7.94 lb per ft, almost the weight of the finished product.

For Specialties—H. M. Harper



Finishing touches: A stretcher-detwister takes kinks out of steel extrusion at Jones & Laughlin Steel Corp., Pittsburgh

Co. spent \$2 million for melting furnaces and an extrusion mill. So far, production is going into the company's product, fasteners. Metal is bought in ingot form, alloyed if needed, recast into billets and extruded by the Ugine-Sejournet process.

Small Lots—Harper is experimenting with superalloys for fastener production, and is using a great number of alloys in small quantities for short production.

One big thing that this extrusion press meant for the company last year: It enabled it to reduce its metal inventory from about \$1.5 million to about \$400,000. Harper also can remelt its scrap. About 20 per cent of the metal it uses comes from scrap from its own operations, recast and put back into the extrusion mill.

Designable—Reynolds Metals Co. points out that extruded aluminum allows production of almost any shape desired by designers. Several standard rolled sections often can be replaced by a single extrusion, saving overlapping metal sections and the cost of joining.

Many aluminum consumers rede-

sign their products to take advantage of this flexibility. Welded assemblies often can be redesigned to extrusions, with reduced cost and improved strength.

Alcoa holds frequent symposiums with engineers, showing them how to make best use of tailor-made aluminum. While dimensional tolerances are not so exact as those obtained by machining, the variety of shapes can't be matched by other production methods.

Phosphor Bronze—Other metals gain by extrusion. Riverside Metal Div. of H. K. Porter Company Inc. is making extruded, phosphor-bronze wire. The product meets such miscellaneous demands as eyeglass frames and valve springs for an electrical transformer.

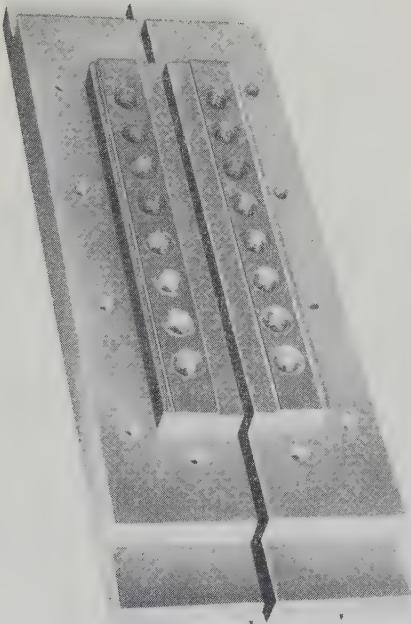
Extrusion, replacing the cold working of high-tin phosphor bronzes, takes less time to make a better product, which has exceptionally high strength and resistance to fatigue.

Copper, Too—An air circuit-breaker part, made by I-T-E Circuit Breaker Co., contains an extruded copper shape originally milled from 1 x 2 in., rectangular copper bars. It weighed 7½-lb per ft. Machining took off 1.8-lb of scrap per ft, so the firm switched to an extruded shape made by Revere Copper & Brass Inc. Scrap now runs less than 0.05-lb per ft.

Although the shape costs more per pound than the bar, reduction in weight was sufficient to save almost 44 cents per foot over the bar. Additional savings resulted from quicker production, less machining and scrap handling time.

Less Machining—Taylor-Winfield Corp. was machining a secondary pad for a resistance welder out of solid copper bar which cost \$11.73 per ft. An extruded shape nearer the finished form weighed less and cost less (only \$10.03 per ft) and cut machining time in half.

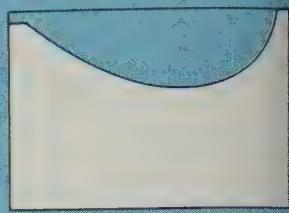
But there's an extra problem with steel extrusions. Potential savings are as large as they are



Part for a high-frequency transformer, previously machined from bar, now made at a 26 per cent saving from the Revere copper extrusion at right



316 stainless



For can manufacturing
Extrusion 8.6 lb per ft;
bar 10.3 lb per ft

How extrusion saves stainless steel

with other metals, but few firms interested in steel extrusions can afford to change traditional methods overnight.

A Chicago manufacturer is much interested in using extruded steel shapes. Having made parts the same way since 1906, he wants to save high labor and tool costs. He can't afford to make sweeping changes without thoroughly understanding what extrusions can do for his company.

Expert Advice Needed—Other firms agree. That's why extruders report a growing number of engineers are asking salesmen how they can redesign to take advantage of squeezed steel. Some discover extrusions can't be made in their size ranges, but many are adopting the new product after prolonged study.

Many users of castings or forgings, or those machining solid bar stock to intricate cross sections can replace those methods with hot-extruded, cold-drawn sections at savings.

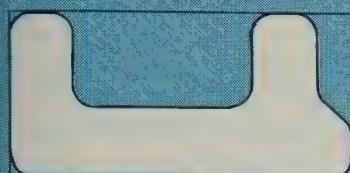
Many Customers—Promising present and potential markets: Business machines, electrical equipment, machine tools, air conditioners, compressors, small arms, automobiles and farm equipment.

A major field for stainless extrusions has been in rolled and flash-welded rings for aircraft components in stainless and high-temperature materials. Other important markets include canners, tool makers and tool and die makers.

Aluminum—New trailer makers are using the light metal in extruded roof and side support flooring, door frames and window sections. Automakers may repla-

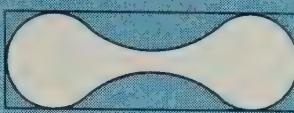
347 stainless

310 stainless



For a turbine case
Extrusion 6.19 lb per ft; bar
10 lb per ft

321 stainless



For an aircraft link
Extrusion 2.7 lb per ft;
bar 5.5 lb per ft

For an aircraft shroud
Extrusion 7.94 lb per ft; bar 20.4 lb per ft

Allegheny-Ludlum Steel Corp.

several pounds of stainless steel with aluminum next year in interior trim and door framing. Extruded, integrally stiffened, wide sections are finding big uses in aircraft and truck and trailer bodies. Railroad cars are another market.

To ease die pressure, some wide aluminum extrusions are made from slab-shaped billets, others from hollow billets. Wide extrusions are sometimes made as split cylinders and later flattened.

Homes and Looms—The architectural field uses window and door frame extrusions, truss members and stud sections for pre-fabricated houses. Consumption of extruded aluminum tube for siphons and sprinkler irrigation systems has doubled in each of the last two years.

In the textile industry, loom

manufacturers are using aluminum extrusions in place of cast iron, steel and wood parts. Extrusions are a real saver for the special machinery field.

Steelmakers find themselves where aluminum producers were several years ago. They face the task of talking with engineers and purchasing agents unfamiliar with what extrusions can do. Much of their current sales effort is directed at acquainting industry with what's available and what the capabilities are. They won't worry about sales now: They'll sell the process first.

Deluge of Questions—“We're swamped with inquiries on applications,” reports Babcock & Wilcox Co. Early in April a large electrical manufacturer invited both B&W and Allegheny Ludlum to

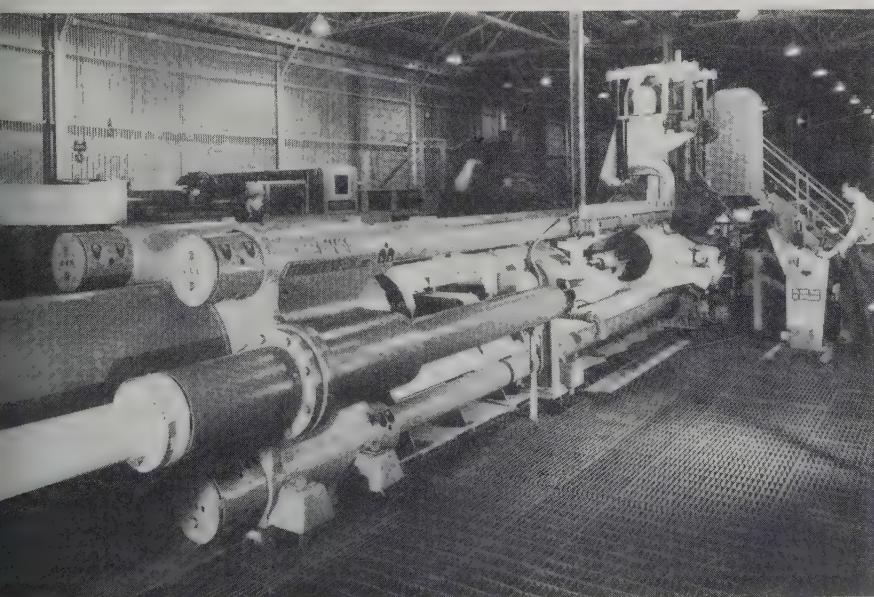
its plant to look over parts to see if they could be extruded at savings in cost. That's the type of help industry needs, and is getting, from extruders.

Allegheny Ludlum also wants to be certain that customers understand and can evaluate extrusions before they place an order. One potential user has been testing sample extrusions from that firm for six months. Despite innate caution, sales are growing. By April, Allegheny Ludlum had made about 100 different extruded steel shapes.

Future Plans—With applications accelerating in nonferrous fields and beginning to climb in steel, producers are looking years ahead. They expect users to continue multiplying, with a corresponding increase in firms operating extrusion presses. Looking toward the future, Alcoa's Vancouver, Wash., extrusion facilities (opened in 1954) were designed to accommodate expansion smoothly.

Dow plans a new 13,200-ton press at its Madison, Ill., plant. Reportedly the world's largest for magnesium extrusions, it's expected to be operating in 1956.

Steel extruders are working toward better hot tolerances. They have to learn more about die design and lubricant application. There's a customer education job to do, too, but these are the normal growing pains of an industry with a future.



This 1000-ton press at Jones & Laughlin Steel Corp.'s new extrusion plant in Pittsburgh squeezes out complex sections of low-carbon steel bars. Lubricant is powdered glass.

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, 1213 W. Third St., Cleveland 13, O.



Steam Heat Treating Boosts Processing Efficiency

You can temper, anneal and stress relieve in steam atmosphere to get scale-free work. Method imparts wear and corrosion resistance, reduces finishing operations

By FRED L. SPANGLER
Leeds & Northrup Co.
Philadelphia

STEAM is doing an important heat-treating job in many plants.

It's used for scale-free tempering and stress relief, to lengthen service life of tools and cast-iron parts, for bluing and to improve compressive strength and hardness of powdered iron parts.

It gives parts better resistance to corrosion. It serves as a surface preparation for painting, japping and lacquering.

With nonferrous metals, which are prone to scale in air atmosphere, steam inhibits oxidation to prevent scaling.

With ferrous metals, steam produces a thin, tightly adherent oxide coating. The depth of coating obtained with a 30-minute cycle (1025°F) is about 0.0001-in.

Longer Life—On high-speed steel tools, such as twist drills, broaches,

reamers and taps, steam treating increases tool life. A steam tempering treatment should be the final step in manufacture, applied after finish grinding.

This increase in life is believed to be due to the finish obtained. It minimizes the tendency of particles of steel to weld onto the tool surface during cutting. A weld build-up in the flute of the drill increases friction during drilling and causes over-heating, which softens the cutting edge.

Holds Oil—Also, the porous oxide surface is a good retainer of cutting oil, probably another reason for increased life.

The beneficial results of steam treatment have been proved for tools used on ferrous metals, but the process is of questionable value where the tools are used to cut the

softer nonferrous metals—aluminum, magnesium, brass and bronze.

Case in Point—Take twist drills made of the 18-4-1 and the 8-4-2 types of high-speed tool steels.

A batch of 200 to 1000 drills, weighing 75 to 500 lb, is heated to 700°F. The furnace is purged with steam for ½-hour at this temperature. Then the temperature is raised to 1000°F and held for 20 minutes, with a constant flow of steam to the furnace. After work is removed, it is cooled in air and dipped in light oil.

When used for drilling heat-treated alloy steel, these steam-treated tools have an average life about 100 per cent longer than untreated drills.

Helps Wear-In—Cast-iron parts, such as cams and bearings, valve tappets, pistons and piston rings,

show better wear and wearing-in properties because of steam treatment. The tough, porous, oxide film retains lubricants and helps fashion parts while they lap into perfect fit during the break-in. Oil retention in the film gives better corrosion resistance, too.

The corrosion resistance of steam-treated surfaces after oil dipping is considered equal to those treated by chemical oxidizing processes then oil dipped.

Parts such as bolts, either cold headed and strain relieved or hardened and tempered, are quenched directly into a soluble oil solution after steam treatment. Other parts are air cooled, then dipped in oil at a lower temperature. Reports on several salt-spray tests: From 14 to 40 hours elapsed before corrosion occurred.

Temper—Many plants temper or stress relieve parts in a protective steam atmosphere. This is particularly desirable in tempering bolts, aircraft structural parts and diesel, injection-system fittings.

Cold-headed bolts and deep-drawn parts, such as bearing cups, are strain relieved in steam atmosphere after cold working.

Besides being a scale-free tempering process, steam treatment gives a good surface finish and improves machinability. One user reports that stress relief of a cold-formed bearing shell in steam in-

creased tool life on a subsequent machining operation 300 per cent.

The same user also reports that tempering alloy studs in steam gave a better surface finish (measured in microinches) in a subsequent grinding operation.

Former procedure was to stress relieve or temper in air atmosphere, then clean by shot blasting before machining or grinding.

Added Color—Because the oxide film given by steam treatment has a uniform, blue-black color, it has made a place for itself as a final finish on many parts.

A sewing machine manufacturer reports reduction of 25 per cent or more in the cost of obtaining a blue-black finish on its parts. The company says that because the iron-oxide film is so tightly adherent, the finish does not crack or chip in handling or service.

Steam-bluing replaced cadmium plating for a maker of postage meter parts. Result was closer-fitting, smoother-working parts and lower finishing costs. Trouble caused by deposits left in shaft holes disappeared.

Faster—When pickling is required prior to plating, painting or other surface finish on parts, such as hacksaw blades, die stocks, tap wrenches, etc., the uniformity and composition of the steam oxide coating gives shorter pickling time.

One user reports time for pick-

ling, prior to plating, is 10 minutes for steam tempered bolts, versus 60 required when tempering was done in air atmosphere.

Powder Metallurgy—Steam treating does three jobs on powdered iron parts: 1. It increases hardness and compressive strength. 2. It improves corrosion resistance. 3. It increases wear resistance.

When the pores of a powdered-iron part are impregnated with an oxide film there is an increase in hardness. This means greater resistance to deformation.

Tests show that steam-treated, iron-powder parts have a yield point, under compression, about double that of regular sintered compacts. However, under tensile load the strength of the compact is somewhat less than before steam treatment.

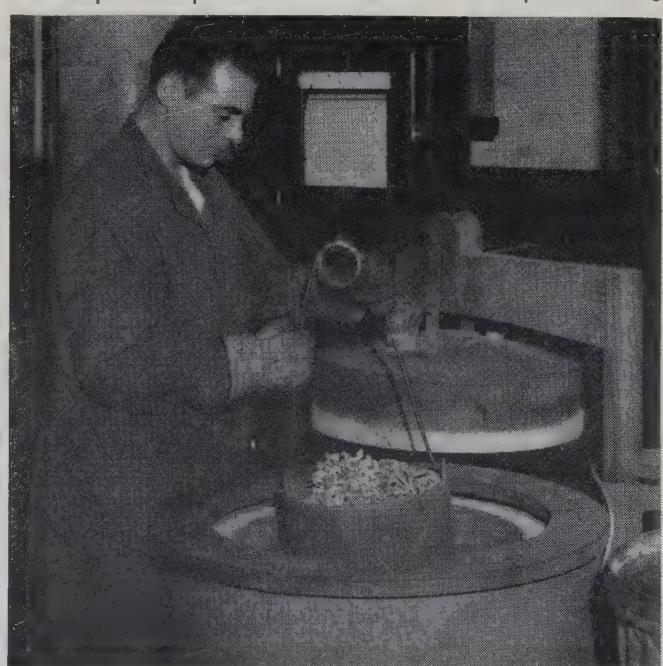
Stops Corrosion—If powdered-iron parts are oil dipped after steam treatment, they show higher corrosion resistance. On bearing surfaces, for instance, where alternate heating and cooling results in moisture condensation, the oxide-impregnated part retains the oil and resists the effects of moisture.

The hard oxide surface also makes for better breaking-in of a part. After the original surface is worn away, the hard oxide surface in the pores is the one continually exposed.

Nonferrous Metals—On brass

Powdered metal parts are steam treated to get greater compressive strength and improved wear resistance

Solution treating these aluminum-alloy clutch arms in steam saves up to 40 per cent of the cost of subsequent buffing



and bronze, the chief advantage of annealing in steam is the elimination of pickling between cold-working operations. In many cases, the surface obtained by annealing in steam, then water quenching, is clean enough so that deep-drawn parts can skip the usual pickle and go directly to the next forming operation.

On brass parts that are stress relieved after machining or cold working (to prevent season cracking) the surface is usually clean enough so additional chemical cleaning is unnecessary. On parts to be plated, only a bright dip is required to remove the oxide film.

A maker of brass valve fittings, regulators and nozzles for acetylene torches now does all its stress relieving in steam. Parts are used "as is" after stress relief.

P-H Alloys—With beryllium copper, precipitation hardening in steam makes for easier cleaning prior to plating. A bright dip removes the oxide film and cleans parts for plating.

On several spring applications, two pickling operations, plus the bright dip, were required when air atmosphere was used. Steam treatment did away with pickling.

Easier To Buff—With aluminum alloys, solution treatment in steam gives a more uniform, more metallic and better reflective surface compared with the duller, matte finish obtained in air. This means steam treatment cuts finishing costs on parts that must be chemically or mechanically cleared after heat treatment.

In one case, steam-solution treating of aluminum clutch arms saved up to 40 per cent of the cost of subsequent buffering operations.

Cycles—Steam heat-treating cycles for ferrous metals usually consist of four steps:

1. Work is loaded into the furnace and preheated in air atmosphere, 650 to 750° F. This prevents condensation of steam on the cold work.
2. When the furnace reaches preheat temperature, it is purged of air as rapidly as possible by incoming steam. Purging time is about 30 minutes, and some 50 volume changes are required.
3. The load is then heated to the final treating temperature and soaked for the required time with steam

Where Steam Treating Is Used

Product	Material	Process
NONFERROUS METALS		
30 caliber shells	Brass	Annealing after progressive deep-drawing operations in fabrication
Valves, regulators, gas torch nozzles, fasteners, cosmetic containers, etc.	Brass or Bronze	Stress relieving after machining
Clips, springs, electrical components	Beryllium Copper	Precipitation hardening or aging
Instrument parts	Aluminum alloy	Solution treating
FERROUS METALS		
Cams, bearings, valve tappets, pistons, piston rings, etc.	Cast iron	Controlled oxide coating
Saw blades, machine parts	Steel	Controlled oxide coating
Twist drills, taps, reamers, counterbores, punches, etc.	High-speed steel	Controlled oxide coating
Rotors and stators for hermetically sealed electric motors	Laminated silicon steel	Controlled oxide coating
Postage meter parts, sewing machine parts, guns, toys	Steel	Bluing
Gears, bushings, pistons	Powdered metal	Controlled oxide coating

flowing through the furnace. 4. Parts are removed from the furnace and either air cooled or liquid quenched.

Nonferrous—Here, the procedure changes slightly. A purge may or may not be required, depending on the characteristics of the load. If the parts have a light cross section and the load is small or light, best results are obtained by purging at a lower temperature, say about 400° F.

If parts have a reasonably heavy cross section and the load is heavy, the purge can be eliminated. The furnace is loaded at operating temperature, and steam is turned on immediately.

Equipment—You need an airtight furnace, preferably with forced circulation, a temperature control system and a good source of steam.

Batch-type furnaces designed for steam - atmosphere treating give good results. Leeds & Northrup makes an electric, forced, convection type that goes up to 1150° F. Steam is fed through an inlet in the bottom of the furnace and exhausts through a flapper valve in the lid.

Any reliable source of steam—a process steam line or a small electric or gas-heated generator—is satisfactory. For continuous production work, about 50 lb of steam per hour generally is required. Cost in most plants is a few cents per 100 lb of load.

** Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, 1213 W. Third St., Cleveland 13, O.*

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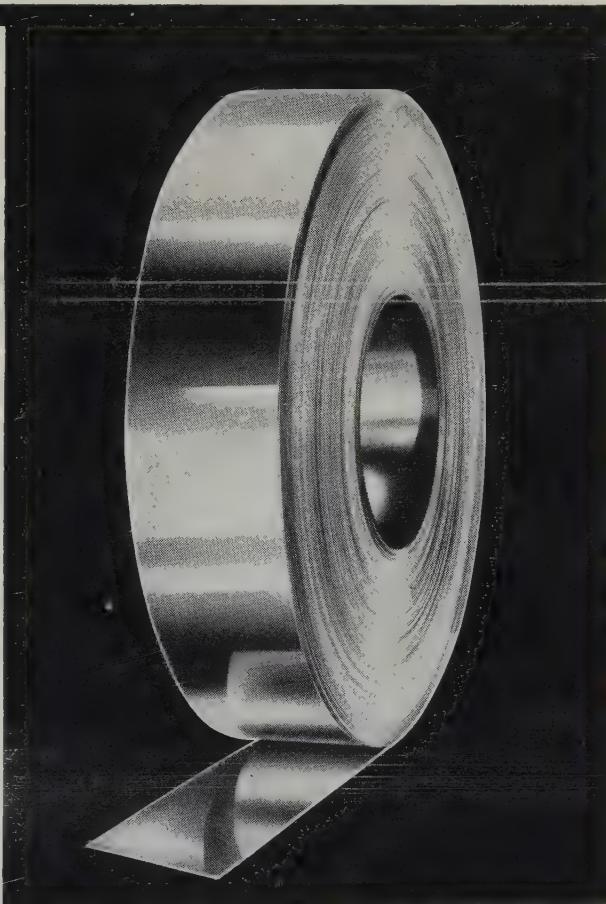
Frequently, qualities can be developed which permit simplification of tooling.

In some instances, restricted specifications may be developed which completely eliminate operations.

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In all cases, users enjoy the usual time-saving advantages of CMP's customary precision gauge and width tolerances . . . more footage per coil . . . fewer production shutdowns for coil replacement on automatic-feed operations . . . longer tool life.

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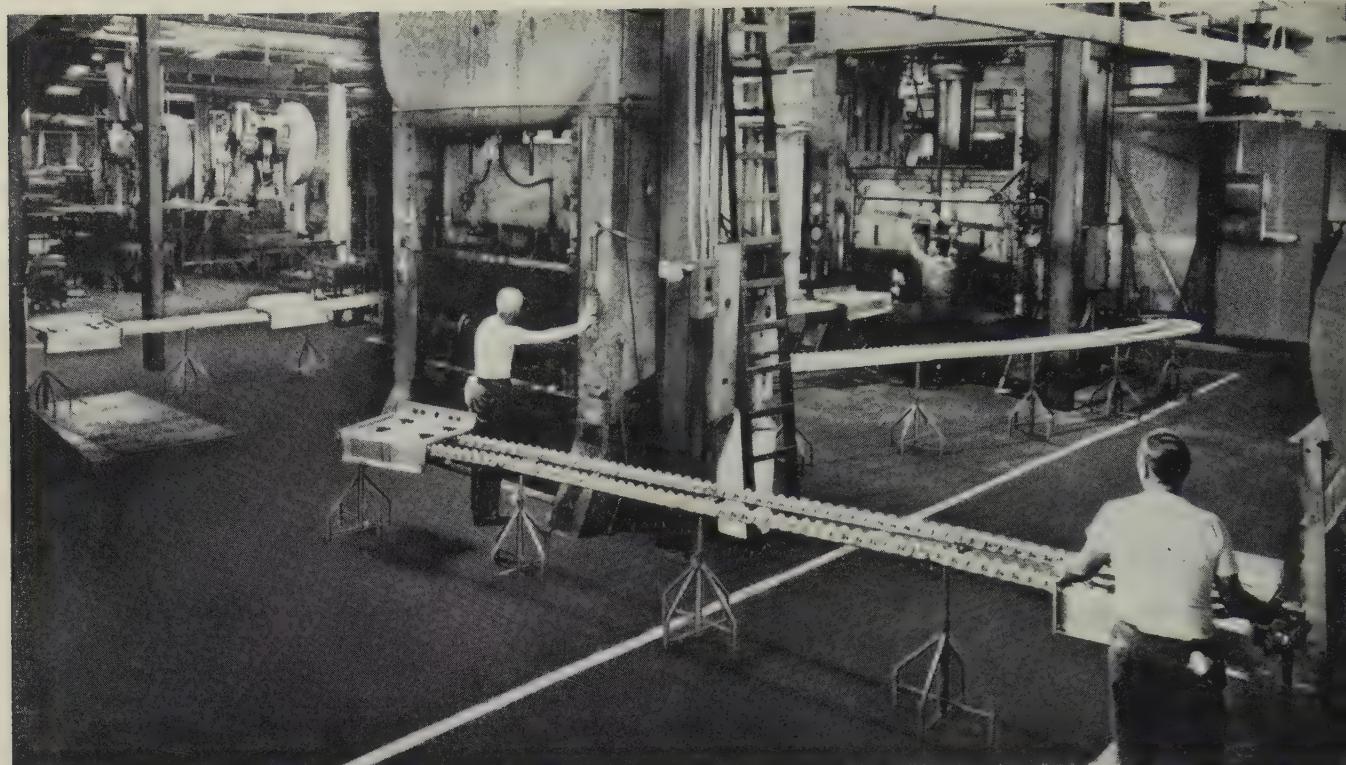
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At start of operation, range top is placed on conveyor and moves to first press where it is stamped. Operator on other side of press places work on the next conveyor line

Parts Flow from Press to Press

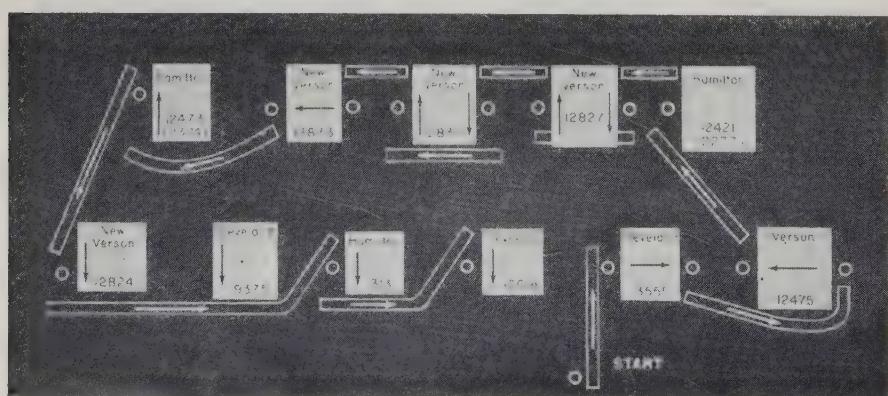
A PORTABLE conveyor system is the key to higher production efficiency in the stamping room at RCA-Estate Appliance Co., Hamilton, O. Tops for electric and gas cooking ranges flow smoothly from press to press during stamping operations.

The equipment paid for itself in a month, say company officials.

Before—The company used six-wheel carts and moved parts manually. That was time consuming and parts were often damaged during handling, making extensive re-work necessary to restore them to usable condition.

Conveyors and portable folding stands were set up to run from press to press. Sections slope

White lines on chart show conveyors at RCA-Estate. When the flow schedule or job changes, conveyors change, too.

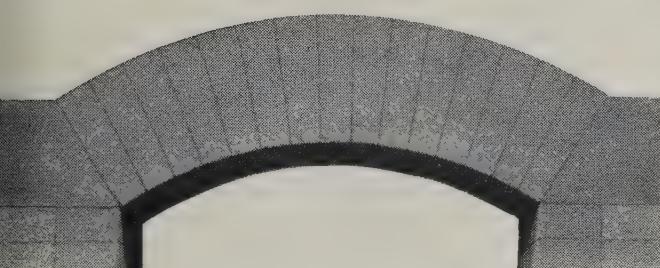


slightly and rails are angled to route parts around corners and other obstructions.

Now — The press operator receives parts at his work station from a feed-in conveyor and sends worked parts to the next work station by placing them on the take-away conveyor. Since edges of the wheels, which overhang the rail, are smooth and round, handling damage has been eliminated. Length of the lines permits active storage banks between stamping operations.

Known as A-F Live Rail, the wheel conveyor is made by the Alvey-Ferguson Co., Cincinnati. It has individual rails which can be spaced widely apart to carry large loads. They are spaced closely together to carry smaller loads. Ball bearing wheels, welded to the rail member, are staggered four wheels per foot for normal applications, or paired eight wheels per foot where extra capacity is required.

Arches . . . of Armstrong Insulating Fire Brick are "tailor-made" to lay up faster



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Operation with 100-per-cent burden is successful, so . . .

Sinter Makes Blast Furnace News

BURDENING the blast furnace with a 100 - per - cent, sinter - ore charge was one of the top attention-getting topics at the recent convention of the AIME's Blast Furnace and Open Hearth committees in Philadelphia.

On the open-hearth side, it was the operation report on the all-basic brick furnace that drew the standing-room-only crowds.

Both topics take on added significance in this competitive era. It has been estimated that there is a potential of 20 per cent added to the output of every blast furnace using a sinter charge. With the oxygen process and electric-arc steelmaking becoming stronger competitors, the higher tons-per-hour rate of the all-basic open hearth is most welcome.

100-Per-Cent Sinter—There is a definite increase in iron production, lower coke rate and lower flue-dust production, reports R. W. Sundquist, division superintendent

of blast furnaces for U. S. Steel's Gary (Ind.) works. For nine months, the No. 12 furnace operated on 100-per-cent sinter. The tests proved some interesting points:

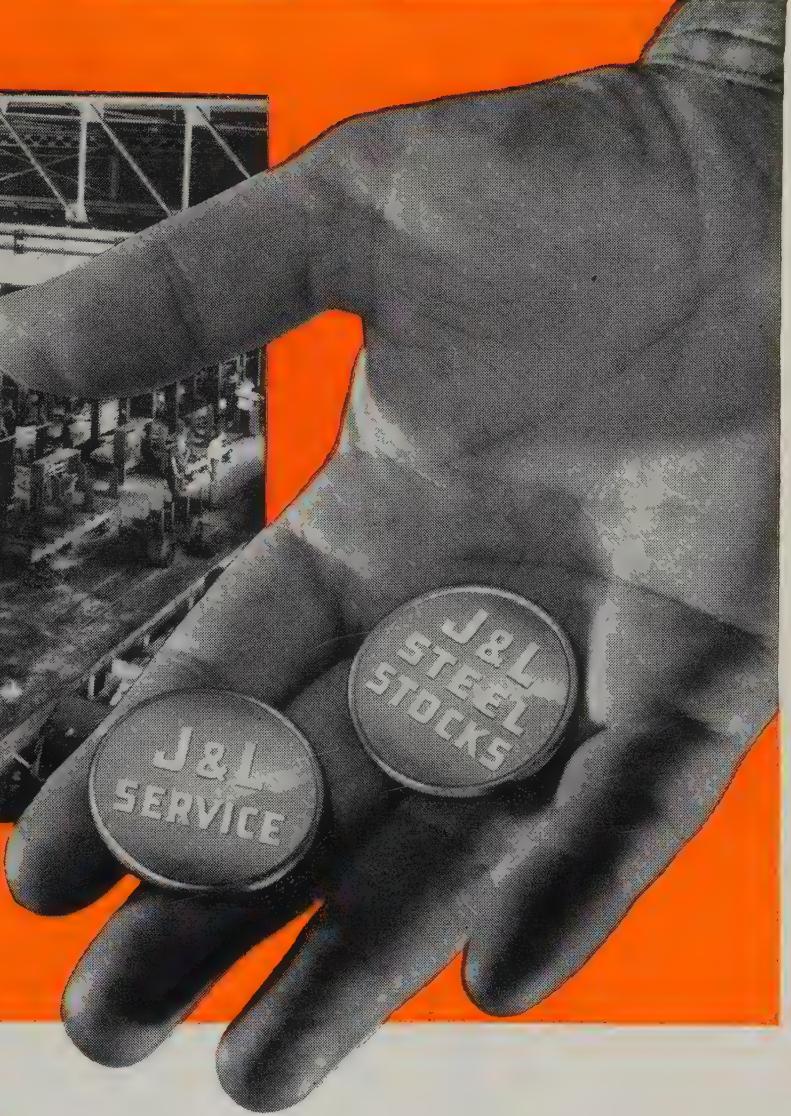
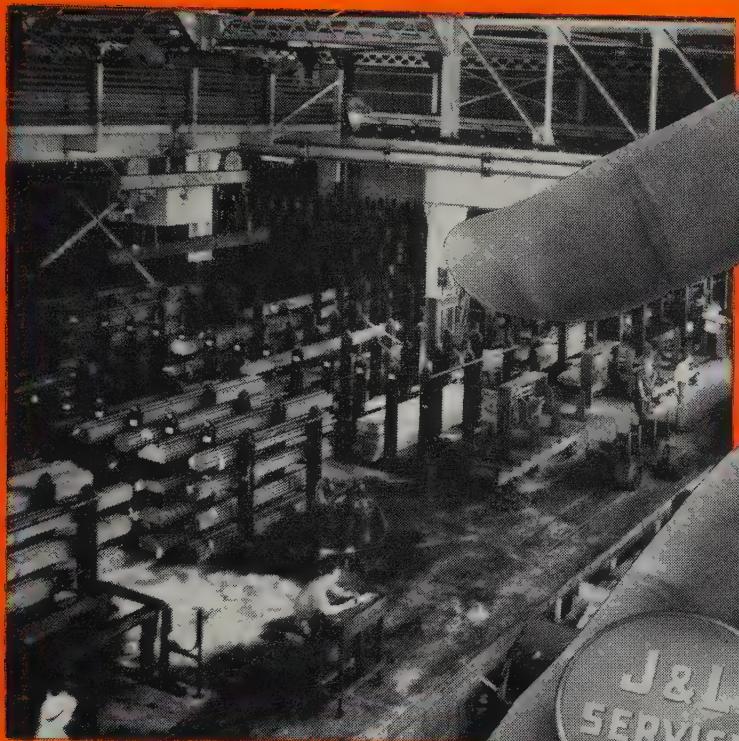
1. It wasn't necessary to provide a long period of adjustment when changing the burden to reach the 100-per-cent sinter.
2. There was practically no change in the temperature of the iron produced.
3. High blast temperatures were demanded for smooth operation.
4. Lower wind volumes were required.
5. There was a tendency to build up on the walls, requiring periodic cleaning.
6. The thermal load of the furnace was significantly decreased.
7. When higher percentages of sinter are employed, it is extremely important to have close control of the sintering operation.

Some Details—Comparison with No. 8 furnace at Gary (its size and age of lining were almost identical with No. 12's) showed a coke rate

of 1328 lb per ton for the No. 12 furnace, against 1655 lb per ton for No. 8. Production of tons of iron per square foot of hearth area also favored the No. 12—2.74 to 2.37. These figures were for the first six months of operation.

A point often overlooked, according to Sundquist, yet one that has considerable monetary value is the saving in limestone. There was a reduction in stone consumption after considering the increased use of open-hearth slag, of about 27 lb per ton of iron. In this furnace it meant a saving of 175 tons of stone per day.

All-Basic Open Hearth—"It's first-helper's dream," was the way A. H. Sommer, Keystone Steel Wire Co.'s vice president and general superintendent, described the all-basic, open-hearth furnace. Not in its second campaign, this 17-ton, boxcar-type installation at Keystone's Peoria, Ill., plant, currently is producing at better than



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19 tons per hour.

Prime advantage of the all-basic construction is, of course, the higher firing rate. Sommer reported a saving of 1 hour in tap-to-tap time, which adds up to 15 man-hours per heat. Over an entire campaign this saving in man-hours will more than pay for the higher costs of the brick, he maintains.

Lots To Learn—Even with the results obtained and the fact that there were no major or unexpected delays in the 503 heats of the first campaign, Sommers pointed out that we still have a lot to learn. The Germans, he estimates, are three to four years ahead of us in all-basic technology.

He added that the competition of oxygen steelmaking and the electric furnace now forces more activity in this direction. "We might even have to change our concept of checker design," he said. In an effort to get better heat-holding properties, we might even consider silicon carbide for the regenerative parts of the furnace, he contends.

Open-Hearth Slag—Use of large quantities of open-hearth slag in the blast furnace is proving well worth the effort that goes into the change in practice. At Duquesne Works, U. S. Steel Corp., E. B. Speer, the assistant general superintendent of steel production, reports that no adverse effect on analyses or quality of finished steel is experienced. While the slag charge of 450 lb per ton of iron produced may not be suitable in all plants, it has offered these advantages at Duquesne Works:

1. It recovers both the metallurgical scrap as well as the metallics in the oxides that were in the open hearth slag. 2. Limestone burden is reduced to 825 lb per ton of iron. 3. The manganese loss through the slag now is recirculated, resulting in a substantial reduction in ferromanganese addition.

Induction Heated Ingots

Next week the Progress in Steel-making feature will describe the advantages of the first commercial application of dual frequency induction heating to rolling mill ingots. This setup broke the production bottleneck at Western Canada Steel's Vancouver, B. C., works.

Broaching Spiral Splines

Production setup enables builder to turn out eight broached parts every minute

NINE involute, internal splines and three internal, helical grooves are being cut on a gear plate simultaneously by a manufacturer of transmission parts.

Four plates are broached during one stroke. Production is 480 parts an hour.

Setup—The four-station fixture is equipped with four vertical loading tubes and an automatic shuttling device that receives parts from the tubes and locates them for machining. Broaches are drawn through the parts in a spiraling motion by helical lead bars attached to each broach puller.



GEAR PLATE
... with internal spiral grooves

After the shuttle fixture is retracted, completed parts drop onto a hinged baffle that directs them into an unloading chute. Broaches are retracted, and the cycle is repeated. A hydraulic circuit, synchronized with the machine cycle, actuates the shuttle fixture.

Cycling Time—The machine cycle, including loading and unloading, requires 30 seconds. Eight parts are completed every minute, with the broaching machine operating at a cutting speed of 15 fpm.

Colonial Broach Co., Detroit, adapted one of its standard pull-up machines to handle this job.

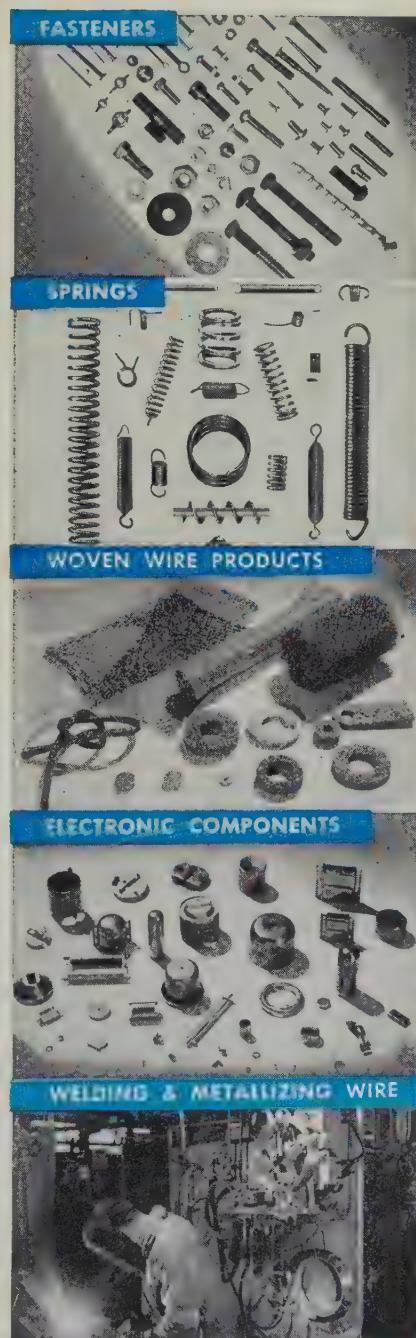
Metal Cutting

A revised edition of *Metal Cutting Tool Handbook* gives the latest data in this field.

Write Metal Cutting Tool Institute, 405 Lexington Ave., New York, N. Y. Price is \$7.50 a copy.

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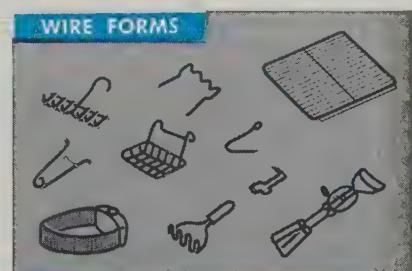


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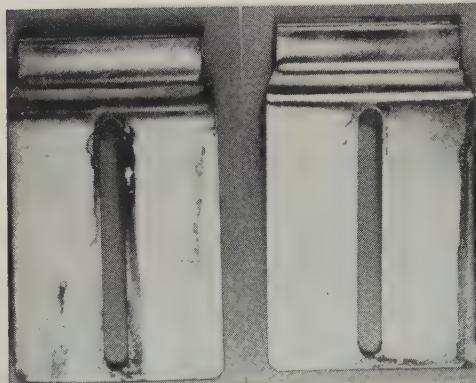
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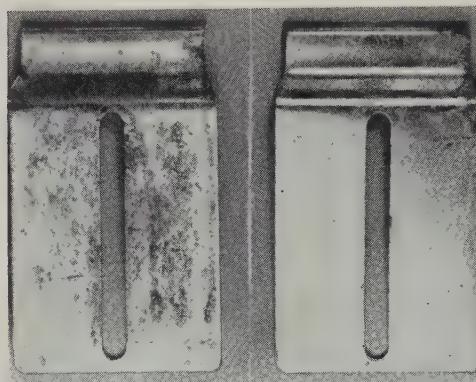
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Comparison Test on Chromium Plated Steel Brackets

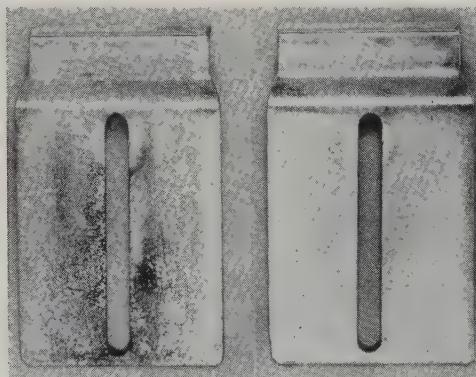
Half-standard plate Standard plate



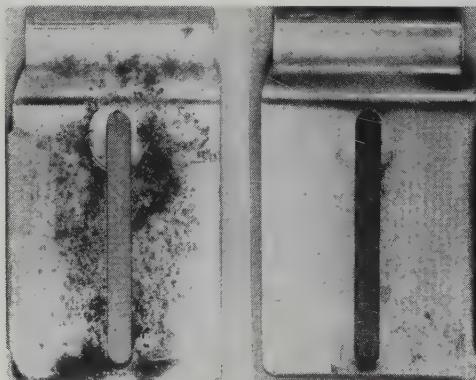
Exposed in 5-per-cent salt spray for 500 hours



Exposed in acetic-acid salt spray for 240 hours



Exposed to industrial atmosphere for four months on roof



Exposed on car license plate bracket for one winter in Detroit

Salt Spray

Passes

Acid Test

Here's an accelerated laboratory procedure that gives results matching out-of-door corrosion on plated metals. It's proposed as an ASTM Tentative Method

SAY WHAT YOU WILL about the standard salt spray test, it has not been able to reproduce what happens to a new car after two months on a Detroit parking lot.

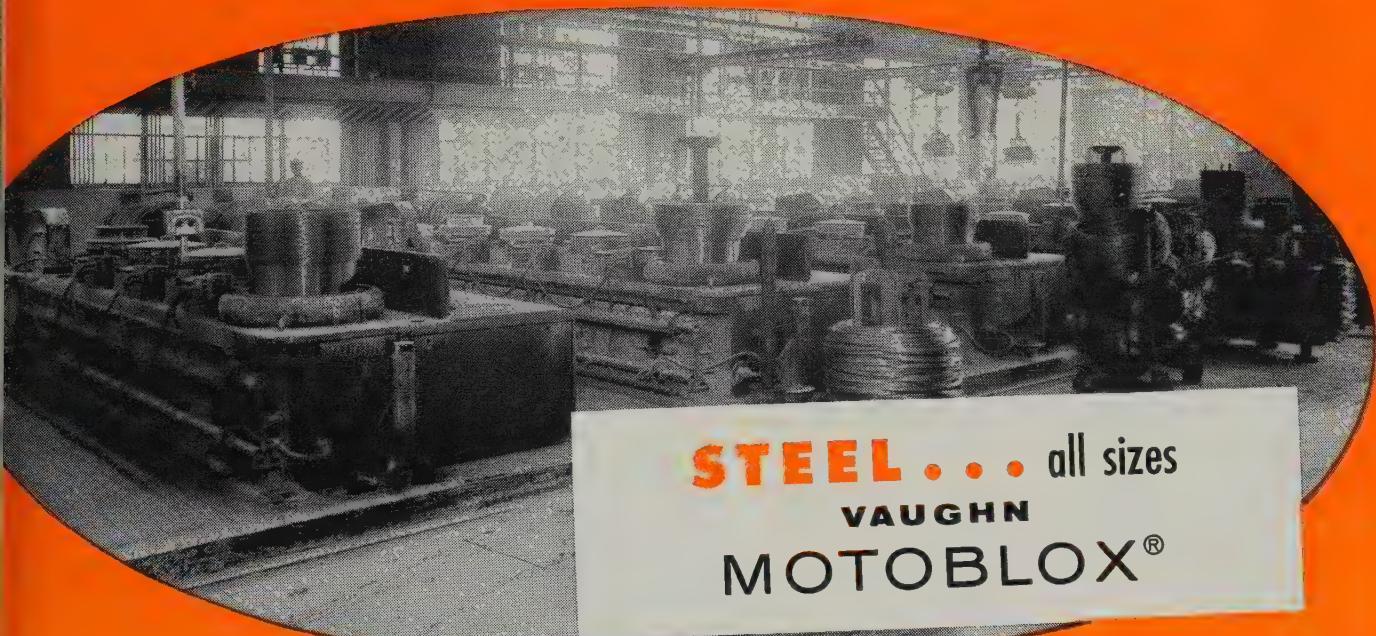
An ASTM task force has come up with an answer: Acid.

Chrome Killer — Acid, suggested by the task force's report, is the real culprit. Industrial atmospheres are charged with dissolved oxides of sulphur; city snows show a pH down to 3.5 (7 is neutral). Acid, says the report, will do for salt spray what it does for city air.

Recommended is the ASTM standard, 5-per-cent salt spray (Method B 117) at 95°F, modified to a pH of 3.2 with acetic acid. Used on plated parts, it has given reproducible results that compare favorably with failures on cars in service. Results are so outstanding that the group has recommended

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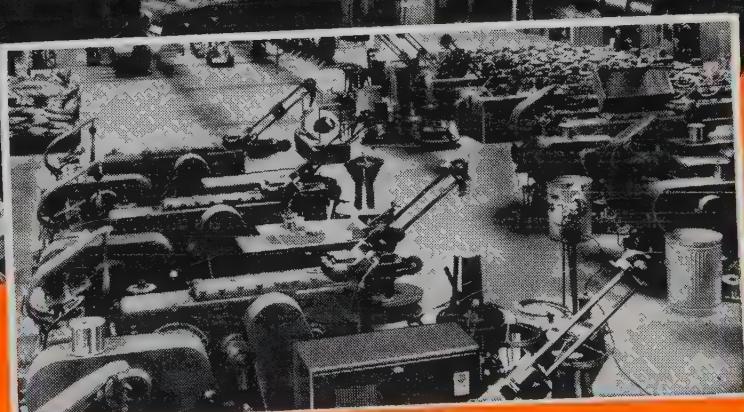
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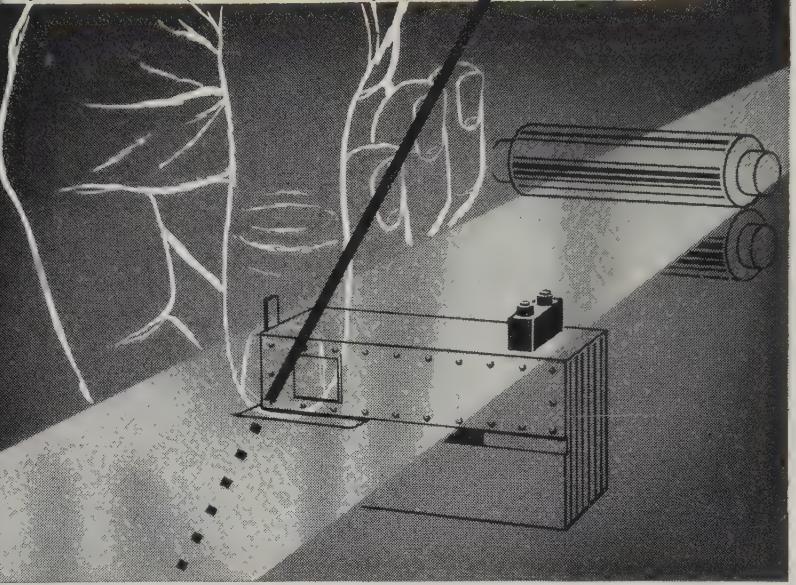
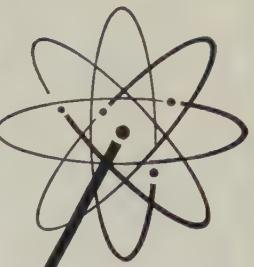
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adoption of the test as an ASTM Tentative Method.

At Last — A good many companies that have been using salt spray with tongue in cheek are going to say, "It's about time!" Automotive, paint and allied industries have been using a 5-per-cent test for years, but the government still insists on a 20-per-cent salt solution which promotes nozzle clogging and a fog which is too dry. Neither has proved satisfactory for evaluating copper-nickel-chromium plating systems on steel or on zinc diecastings.

Straight salt spray (Method B 117) shows cadmium superior to zinc in corrosion resistance (right for salt water) but in service on city streets it works just the other way around. That's why the automotive industry dropped cadmium on exposed parts years ago. Acid spray pegs cadmium right.

Blisters—Method B 117 won't reproduce typical service blistering of plated zinc-base diecastings, but the acid modification will. For ten years, the auto industry has been adding 1-per-cent, glacial acetic acid to a 20-per-cent salt solution at 120° F to reproduce blistering. The recommended modification cuts the salt concentration down to a level easier to work with.

The acid spray has been tried on aluminum and aluminum alloys, on aluminum anodized and phosphate-coated and on steel painted, phosphate-coated and covered with rust-inhibiting oils. In many cases, the acid spray revealed chinks in the anticorrosion armor that plain salt failed to touch. The report called the results "quite satisfactory."

Backing—Co-operating with the task force (W. D. McMaster, C. G. Durvin, C. F. Nixon) were General Motors Corp., Chrysler Corp. and Parker Rust Proof Co. Tests were made on chromium-plated brackets which were exposed on a roof and on the front bumpers of cars for one winter. In each case, failure matched acetic acid salt spray results.

It appears that at last there is an accelerated corrosion test above which we can say: The item that fails first in test will fail first in service, or the item that does not fail in x hours of test will not fail in one year of average service exposure.



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It will pay you to investigate the many advantages of HOUGHTO-CLEAN Cold Cleaners and how they can be applied to your operation. Call the Houghton Man, or write to E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

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Both sides of the crack and the top and bottom of the frame were chamfered 6 in. on either side of crack

Low Heat Welding Saves the Job

A serious crack in a press frame threatened an important order. Without dismantling or preheating, the \$80,000 press was repaired for \$450

A BREAKDOWN is always a serious matter in plant operations. When it occurs during an important

production run, it can prove disastrous.

This was the situation at Federal

Pacific Electric Co., Newark, N. J., when a 150-ton press failed. Getting it back into production as soon as possible was a must.

The crack was examined and found to be visible on either side of the frame. Company welders agreed the repair was possible if low heat input process were used—they could weld in position without dismantling or preheating.

Oil Troubles — Because welders could foresee difficulties in obtaining a good bond to the oil-impregnated cast iron, they ran a few passes on the base of the press. It was no good. The filler metal was not surface alloying to the base metal. Bond strength was inadequate.

The difficulty was traced to oil which seeped from the pores of the iron. They had to be sealed, so that nitrogen and hydrogen gases were not formed to cause porosity and pinholes in the weld deposit. A district engineer for the Eutectic Welding Alloys Corp. recommended EutecTrode 27. Trial passes showed it would work.

Preparation—First, all defective

May-Fran
... first
for
AUTOMATION
in
scrap
handling
systems

The CHIP-TOTE conveyor permits complete utilization of machine tools by eliminating shut-down for manual scrap removal.

The CHIP-TOTE conveyor permits complete utilization of machine tools by eliminating shut-down for manual scrap removal.

It handles a continuous flow of hot or dry chips, turnings and borings, any multiple spindle automatic ma-

fatigued metal had to be removed. With ChamferTrode grooving electrodes, metal was removed from both sides of the crack and the top and bottom of the frame.

When veeing was completed, the entire weld area was wire brushed. The heat of the chamfering operation had removed the chill from the casting to improve the flow characteristics of the alloy.

Base Deposit—A 5/32-in. Eutec electrode 27 was inserted into the holder and the machine set at 95 amps. This low amperage materially assisted in keeping heat input to the minimum.

The entire area was padded with this electrode to form a foundation for the Xyron 2-24 metal which would finish the weld. Care was taken to avoid depositing metal on the crack.

Finish Weld—First deposits of Xyron 2-24 joined the two sections at the crack. Skip welding was used throughout, and passes (2 in. in length) were continued until the casting was built up.

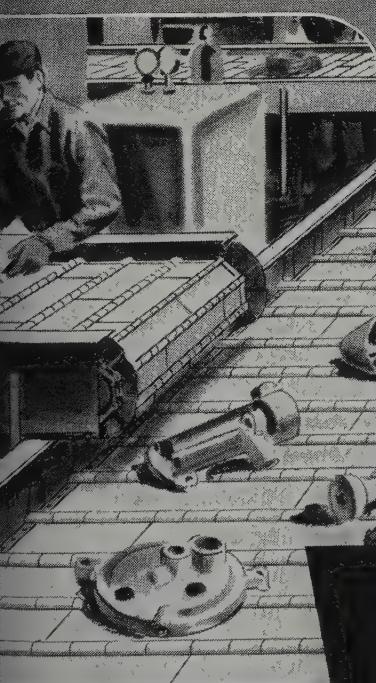
For additional support, a steel plate was welded to the face of the



Build-up is complete. A small steel plate was later joined to the casting top

frame and a smaller one to the top of the casting. When the repair was completed, it was found to be well within the specified tolerances. The machine was in perfect alignment.

The \$80,000 press was returned to service with the minimum loss of production. Repair cost less than \$450, including labor, chamfering electrodes and welding materials.



Now is the time to put AUTOMATION to work . . . Now is the time to cut production costs . . . May-Fran engineers design and build complete scrap handling systems for the automatic removal of machine turnings or chips. May-Fran conveyors will transmit scrap to ultimate point of disposal.

Press Scrap systems can be made completely automatic. Hinged-steel belt will take scrap from presses, handle it through blanking, shearing, forming and baling processes, and deliver it to rail cars.

May-Fran is prepared to engineer, fabricate and install complete conveyor systems to your specifications.

Write today for complete information on how an automatic scrap removal system will cut your production costs.

Bulletin MF-530 describes the new Hinged-Steel conveyor belt.

Bulletin MF-640 describes the Chip-Tote conveyor which removes scrap from operating machines.



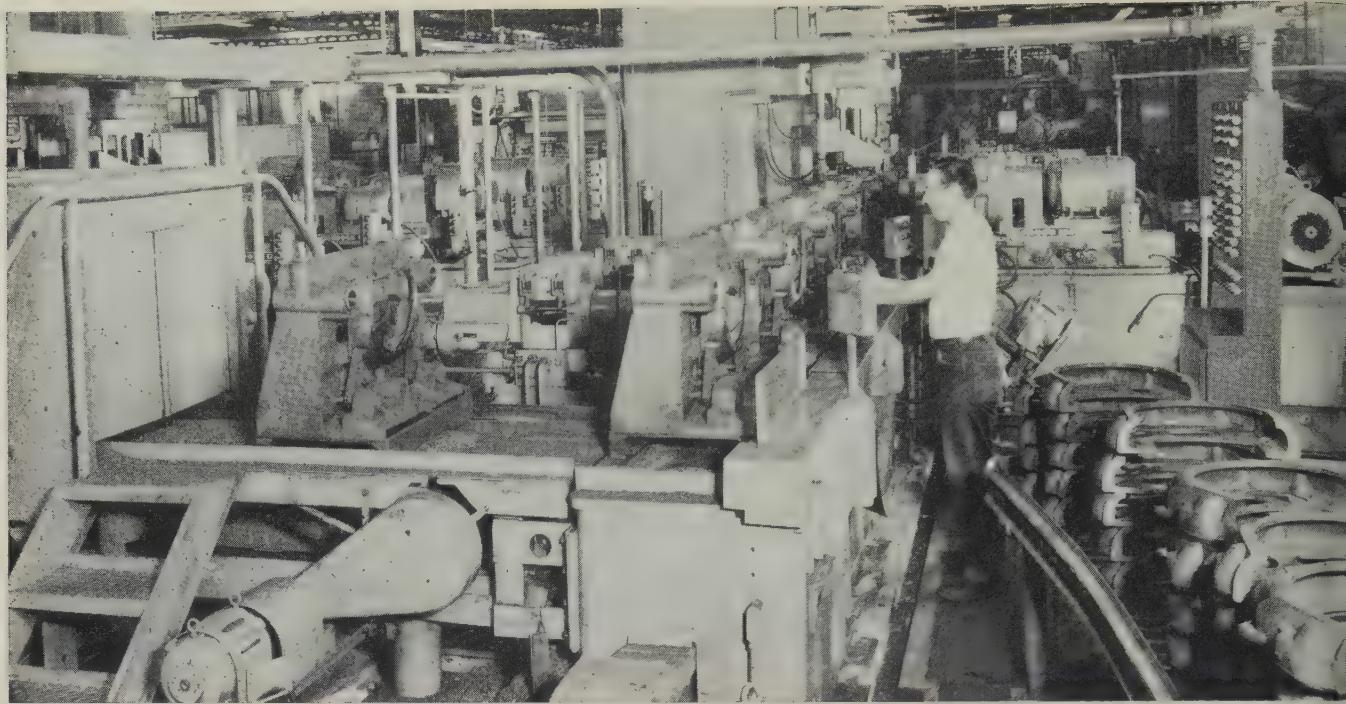
DESIGNERS AND ENGINEERS
OF COMPLETE SCRAP
HANDLING SYSTEMS

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ENGINEERING, INC.

Hinged-steel belting handles scrap as well as heavy and abrasive castings. Belt economical . . . maintenance-free.

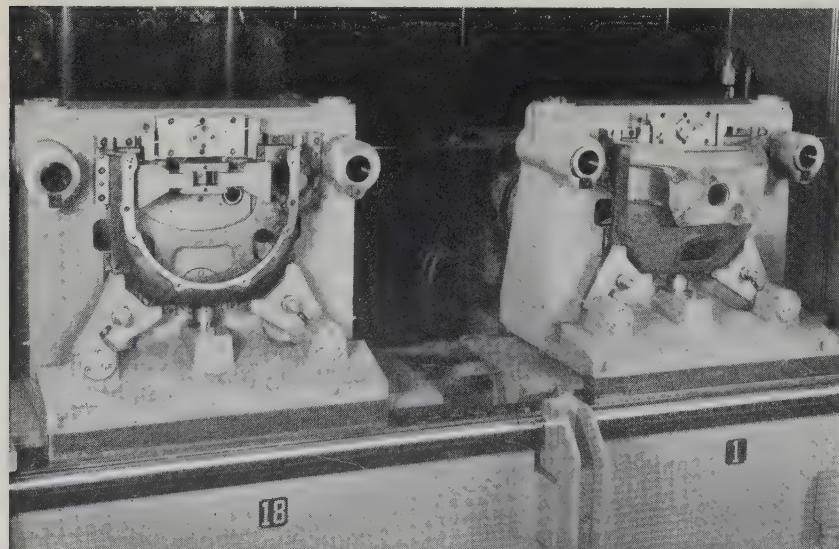
1725 CLARKSTONE ROAD
CLEVELAND 14, OHIO

5003-MF



Flywheel housings or clutch housings—they're all the same to this machine. It takes them in any order, senses the difference and performs a different machining job on each

Duplication Licked with Two-in-One Tooling



One face the same on both parts makes it possible to lock them in identical fixtures. Left, Hydra-Matic flywheel housing; right, Synchromesh clutch housing. The machine accepts either or both

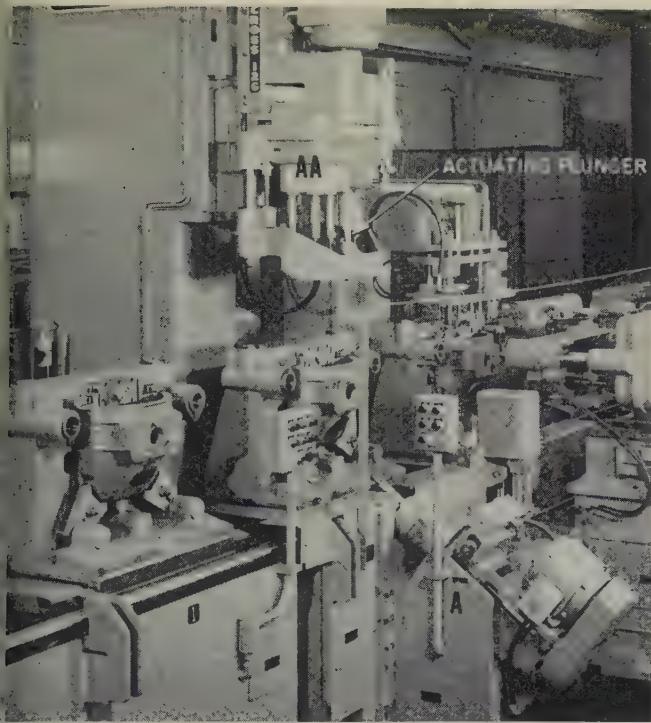
SUPPOSE YOU machine two parts that differ radically but have one common face. The work load varies. One day it's 75 per cent one part; the next it's 75 per cent the other.

That means two machines which are idle one-third of the time. One transfer-type machine that would accept the parts interchangeably and perform the alternate machining operations automatically would eliminate most of the duplicate tooling. Idle time would be cut to zero.

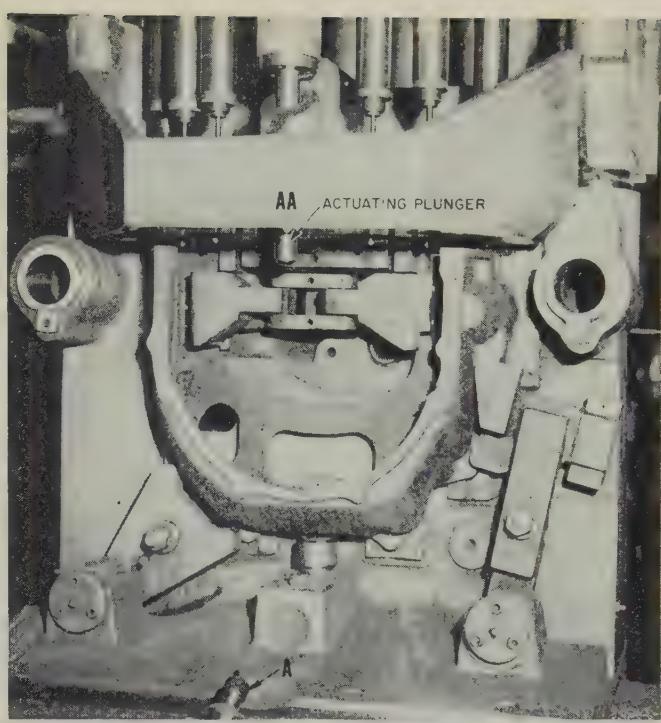
That's what Pontiac Motor Division of General Motors Corp. thought, and the Cross Co. did.

Either or—You can see the machine at the Pontiac engine plant, Pontiac, Mich., where it turns out mixed Hydra-Matic flywheel housings and Synchromesh clutch housings at a clip of 170 an hour. Each station on this Cross Transfer-Matic performs an alternating function, depending on the part fed to it.

Common denominator of the parts is the face which bolts to the engine block. One set of fix-



Here's how the machine operates at a typical station (station A-AA). As drillhead AA traverses to meet the part below it, the actuating plunger protrudes. If it contacts something, the part is a Hydra-Matic housing and station A remains inoperative. Meanwhile, the two outside drills



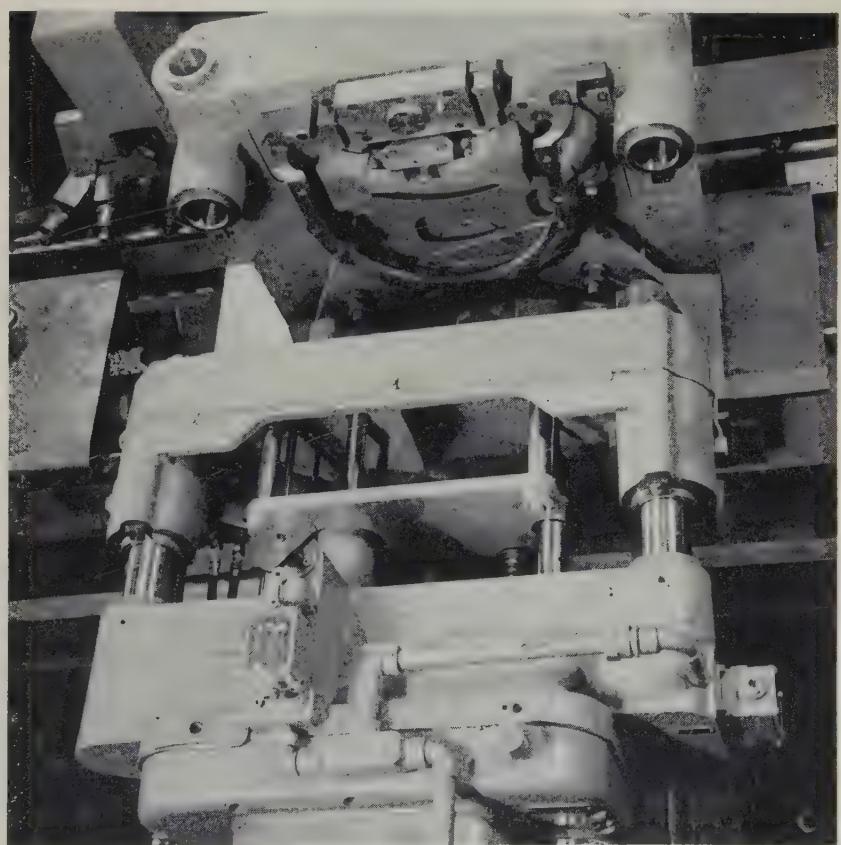
of the AA head are cutting metal. If the plunger contacts metal, a Synchromesh housing is below it. All AA drills will be cutting metal, and drillhead A will advance from below to drill an angular hole in the housing face. For action at another station, look below

ures can hold either part. The operator simply picks up the part that comes to him on the conveyor, loads it into a fixture and the machine does the rest.

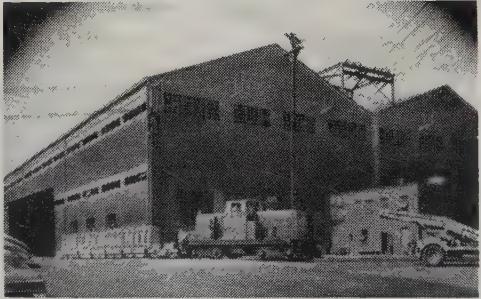
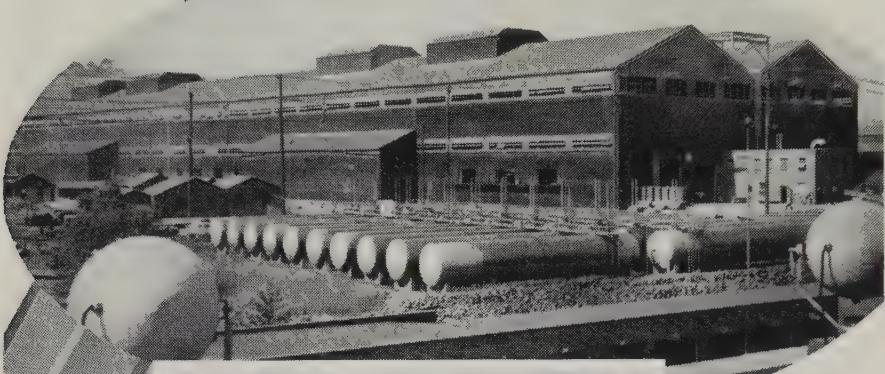
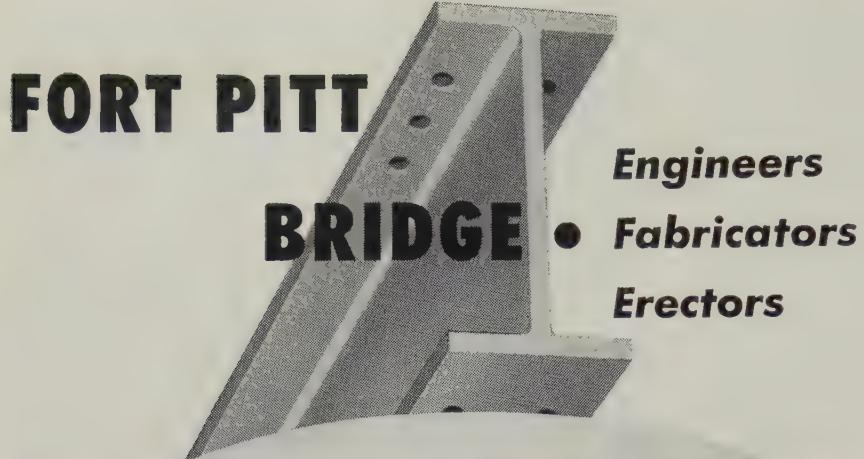
Many Holes — Operations performed are drilling, boring, tapping, countersinking, counterboring, reaming and inspection. Holes on the engine face are the same for both parts, but there the resemblance ends. Actuating plungers at each station tell the difference. They signal the advance or hold back the 212 cutting tools distributed through the 14 stations.

Tool feed and traverse, transfer of parts between stations and locking of parts in fixtures are accomplished hydraulically. A unit for removing chips from the fixtures and a chip conveyor are part of the machine.

Money Talks — Pontiac could have ordered two machines, the conventional way to tool for these parts, but economy was all on the side of two-in-one tooling. With more automatic transmissions and fewer conventional transmissions being made each year, it is easy to see why.



Station HH. The drillhead inspects six holes and reams two others drilled on the Hydra-Matic housing at earlier stations. If a Synchromesh housing moves into the station, the actuating plunger hits it, and the station does not function



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Diecastings Make a Mark

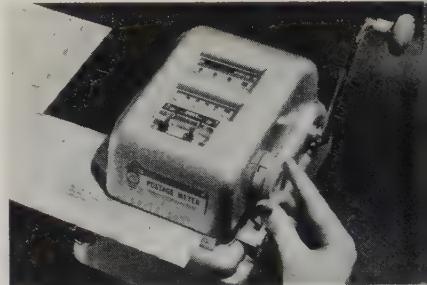
Pitney-Bowes found that postmark dies could be zinc diecast at a much reduced part cost

DIECAST zinc postmark dies are saving Pitney-Bowes Inc., Stamford, Conn., 77 per cent on part costs.

The dies, used on desk-model postage meters, were produced of silicon brass by investment casting (lost-wax method). City and state identification were engraved on the part.

A design study disclosed that satisfactory dimensional accuracy could be achieved in a zinc diecasting at reduced cost.

One Operation—With the new design, city and state information are cast integral with the part. Interchangeable inserts in the die minimize changeover costs when converting from one city identification to another.



DESK-MODEL METER
... with zinc, diecast postmark



POSTMARK DIE ASSEMBLY
... saves 77 per cent on part cost

The postmark die assembly is shown at the right in the above photo. Containing city and state identification, it slips over the U-shaped bracket, which houses date stamp wheels and is held in place by two, slip-fit pins. Precision fabrication of component parts simplifies assembly and minimizes alignment problems.

Ready-To-Finish Gears

They save machining time and cost for a manufacturer of locomotive drive gears.

FORGED STEEL gear blanks are supplied by Pittsburgh Gear Co., Neville Island, Pa., 1 hour of machining time on each mine locomotive drive gear produces. Blanks are supplied annealed, rough machined and ready for finishing.

Operators finish turn, face and bore blanks on a Bullard, 36-in., vertical turret lathe. Because the blank already is at standard, machine-shop tolerances, the lathe needs to be set up only once for each gear of a given size.

Hobbing—Gear teeth are hobbed on a Gould & Eberhart, 36-in. hobbing machine. Uniform internal structure of the forging allows the operator to hob at maximum speed. Lack of hard spots and surface porosity has increased the life of high-speed hobs by 20 percent, says the gear company.

After machining, teeth are case-hardened to 321-360 Brinell.



HOBBING TEETH
... in forged steel gear blank

Tough Job—These spur gears get severe wear in mine locomotives. The heavy trains start and stop almost continuously.

Gear failures put a locomotive out of service. Down time here, like on any production machinery, is expensive. For this reason, most coal mine locomotives are equipped with forged steel gears. Because of their denser core and more uniform internal structure, forgings wear longer.

Ready-for-finishing gear blanks are supplied Pittsburgh Gear by the Standard Steel Works Division of Baldwin-Lima-Hamilton Corp., Burnham, Pa.

NEW Revised Edition

56-page Catalog of tools

for making:

**WORMS WORM GEARS HERRINGBONE SPUR STRAIGHT BEVEL
ZEROL INTERNAL SPIRAL BEVEL RACKS ACME SCREWS
SPROCKETS SPLINES KEYWAYS**

This FREE Book will cut your gear costs!

When we first offered the BRAD FOOTE Hob List about a year ago the response was tremendous. Thousands of gear designers and engineers recognized in this catalog an opportunity to substantially cut their gear costs. And now, a new revised issue makes possible even greater savings.

The reasons are obvious. Since 1923, BRAD FOOTE has specialized in custom-built as well as production gears. Over the years we have built up a tremendous stock of hobs, cutters and broaches,

a stock that enables us to do just about any gear cutting job you may have.

By laying out gears so that they can be made from tools now in the BRAD FOOTE stock, you can save substantially on tooling costs... and eliminate delays necessary for the preparation of tools.

The Revised BRAD FOOTE Hob List includes all tools prepared through April, 1955. If you have a copy of the Hob List, write for the revised edition. And if you haven't had a Hob List, write for your free copy—find out how it can save you time and money on gears.

IMPORTANT NOTE:

If you now make your own gears, ask for a copy anyway. You may find that it is cheaper for us to make them.

BRAD FOOTE GEAR WORKS, INC.

1305 South Cicero Ave., Cicero 50, Ill.

Please send me my free copy of the new revised Hob List.

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NEW

PRODUCTS and equipment

Write directly to the company for more information

Thread Rolling Machine

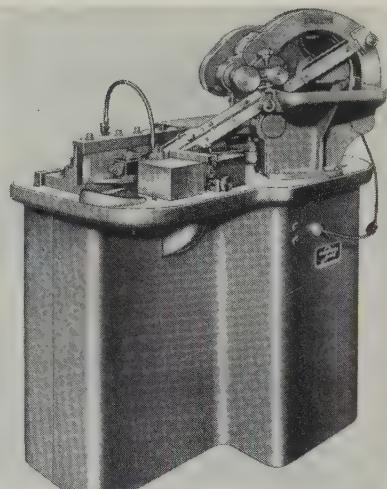
A new feeding system gives Model A-190-R a 75 per cent increase in efficiency.

Essentially Hartford's Model A-90-H, automatic thread roller, the new model has a self-contained rotary hopper. Production is 230 to 250 pieces a minute.

The hopper is designed for easy maintenance and repair. It is independently driven by a 1/12-hp motor, permitting variable bucket speed with a gear change. The cast iron hopper bucket lifts out

for servicing without disturbing previous settings. For easy inspection and replacement, the clearing wheel is mounted on a bracket which swings away from the tracks.

Capacities: From machine screw sizes No. 2 (0.086 in.) to No. 10 (0.190 in.); thread length, $\frac{1}{8}$ to $1\frac{1}{2}$ -in. with standard-depth dies, 2 in. with special-depth dies. Hartford Special Machinery Co., 287 Homestead Ave., Hartford 12, Conn. Jackson 5-1401



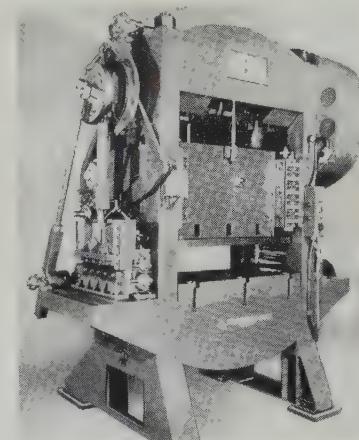
100-Ton Automatic Press

This double-crank press is built with 40, 50 and 60 in. between uprights and is 32 in. front to back. Speeds range from 80 to 240 strokes per minute. It features the cylindrical-type ram for accurate alignment. Air-clamped feeds prevent stock distortion and permit positive feeding. It is available with single or double feeds and a scrap cutter.

Standard equipment on the press includes a balanced crankshaft, air counterbalances, an automatic-

metered lubrication system, wired electrical control system, air clutch and special shock mounts.

This welded steel press is particularly suited for industries requiring the stacking of parts. The leg design permits large accessible areas under the press for the installation of stacking devices. The leg design also raises the bed height for easier setup. Di Machine Corp., 2701 W. Irving Park Rd., Chicago 18, Ill. Independence 3-3101



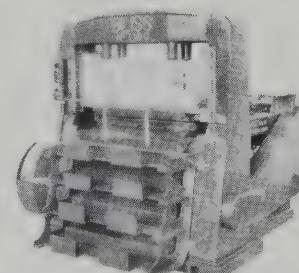
High-Speed Scroll Shear

It is designed for the high-speed blanking of scroll strips for can ends, bottle caps and jar tops. The wide bed handles sheets up to 36 in. square.

Built for precision feeding and trimming at high speeds, the No. 1100 can be automatic or hand fed. It is equipped with magnetic or mechanical feed bars and a new intake trimming slitter. For extra rigidity, the one-piece frame is of cast Meehanite. The slide, equipped with long guides, is coun-

terbalanced.

There is ample room for new dies, which can be mounted easily in the die sets with guide pins (double and triple dies can be used). Other features include bronze-bushed connections at both ends, antifriction bearings for slittershafts, electric pushbutton controls and air-actuated, friction clutches. E. W. Bliss Co., 1375 Raff, SW, Canton, O. Canton 7-3421



Small Clutch Applications

Furnished in complete, low-cost, packaged units, these clutches are designed for machines with power requirements of 1 to 31 hp. Ease of adaptability (through standardization of bores and mountings) and tapered bushings, result in reduced installation and service costs.

Features: 360-degree engage-

ment, uniform friction pressure, instant response to electropneumatic controls, automatic compensation for wear to friction shoes and complete disengagement. The clutches are adaptable to cyclic or continuous operations and can be locally or remotely controlled.

Mounted with tapered bushings,

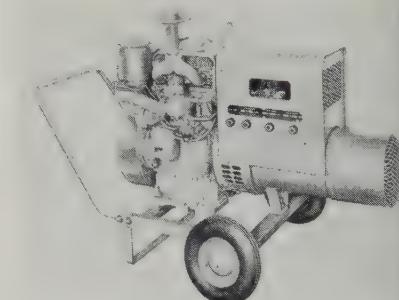
the spider bearing (illustrated) has an extended drum hub mounted on antifriction bearings. A mating sheave or sprocket can be adapted



to the extended portion of the drum hub. A spider, gap-mounted type (with tapered bushings) makes possible simplified installation direct to a mating component. A spider, close-mounted bearing with tapered bushings is designed for flexible coupling service. All applications provide overload protection. Fawick Airflex Div., Fawick Corp., 9919 Clinton Rd., Cleveland 11, O. Atlantic 1-2211

Engine-Driven Arc Welder

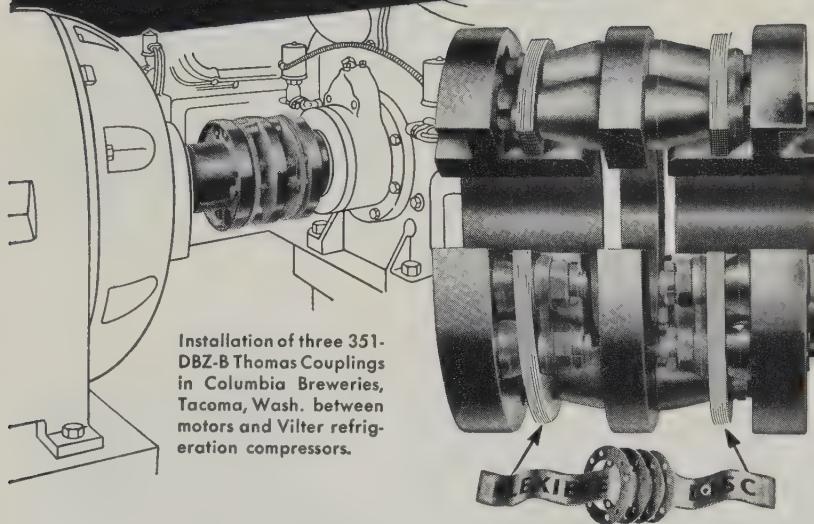
This lightweight, heavy-duty machine welds, cuts, solder, brazes or hard surfaces. Weighing 425 lb, the WN-180 has a service range of 20 to 200 amp to take



care of practically any welding job. Its outside dimensions, 45 29 x 21 in., make it ideal for jeep or small truck mounting. (A detachable, two-wheel mounting available).

The unit is powered by an in-

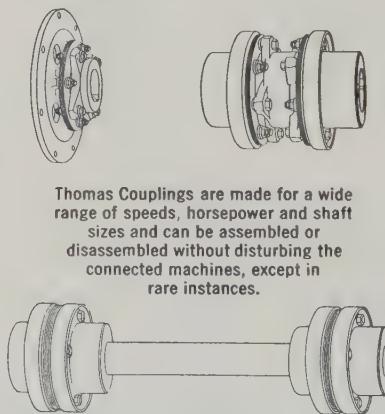
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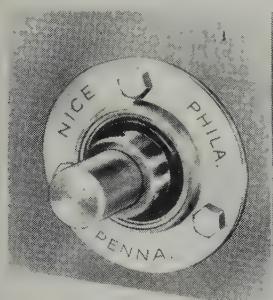
ustrial-type, 12-hp, 2-cylinder, 000-rpm, Wisconsin, air-cooled engine. (The latter prevents freezing.)

The operator merely plugs in to the range he desires—high, low or medium—and starts welding. Harischfeger Corp., Welding Div., Milwaukee 46, Wis. Orchard 1-400

Flange-Mounted Bearings

Here are low-cost, self-aligning bearings designed for machine frame applications. A labyrinth composition seal assures retention of lubricant and the exclusion of foreign material. Shaft sizes range from $\frac{1}{2}$ to $1\frac{1}{4}$ -in. Applications: They are recommended for medium loads, and speeds ranging up to about 5000 rpm max.

The F100 assembly is mounted



in a frame opening and is attached by three bolts which are tightened after the shaft is inserted and aligned. Tightening the three holding bolts clamps the bearing in a fixed position. Two setscrews are locked in the final operation. Nice Ball Bearing Co., 30 & Hunting Park Ave., Philadelphia, Pa. Baldwin 3-6000

Gas-Electric Truck

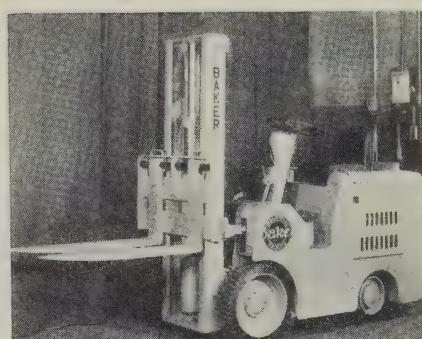
This 3000-lb unit, model FD-30, utilizes a variable-voltage generator with a gasoline engine, to give the performance of a gas-engine truck with the economy of an electric truck. Clutch, transmission and gear shifting are eliminated.

A foot-pedal-operated, electric-inching control, permits high-speed

hoisting at low travel speeds.

The unit is powered by a heavy duty, 4-cylinder industrial engine. A low-pressure hydraulic system, with a continuous-flow pump supplies oil to lifting and tilting cylinders. Speed is controlled by a metering valve which by-passes excess oil to the reservoir.

Maximum travel speed with full load is 8 mph. Full-load lifting



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Ridgely & Bush Sts., Baltimore 30, Md.

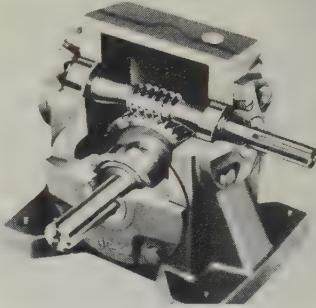


NEW PRODUCTS and equipment

speed is 40 fpm. Total lift height is 130 in. The power axle has a single-reduction, worm-gear drive. Baker-Raulang Co., 1250 W. 80th St., Cleveland, O. Olympic 1-3000

Speed Reduction Units

The 100-series reducers are standard gear reduction units made in a full range of models and ratings for all drive needs. Compact design and improved worm gearing provide greater load carrying capacity, with less weight and space. Fins on housings improve heat dissipation. Fan cooling



is optional on larger-sized reducers, except compound units.

Units are available in 52 standard stock models—283 units with ratios from 5:1 to 3600:1, and output torque ratings from 40-in. lb. to 9400-in. lb. Boston Gear Works, 73 Hayward St., Quincy 71, Mass. President 3-0400

Transducer Converts Variables to Air Output

Electrical measurement of such process variables as temperature, speed, power and pH are converted into a proportional 3-15 psi pneumatic output and transmitted to graphic panel receivers by this electromagnetic transmitter.

Easily mounted on the back of a control panel, the transmitter receives a millivolt signal from the measuring element, converts it into a proportional 2000-cps, a-c voltage, amplifies and filters the signal and feeds it to a phase detector circuit. The resulting direct current output is passed through a temperature-stable resistor and transducer winding, which are com-

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SQUARE D's NEW POWER-STYLE **SWITCH BOARDS**

DESIGN LEADERSHIP FEATURES

Distinctive Styling provides an attractive, modern appearance matching the control center design.

Easier Installation because removable front and back plates expose generous wiring parts. Isolated horizontal wiring has drop-off openings, assuring safer, neater wiring.

Flexibility. Complete sections or branch units can be added or changed to meet specific job requirements.

Easier Inspection and Maintenance. Front, side and back plates are removable, thus providing easy and immediate access to specific areas.



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DESIGN LEADERSHIP FEATURES

Increased Safety because bus bars are fully enclosed, rigidly supported and have ample cross section...circuits isolated by individually enclosed plug-in units...disconnect handle designed in units...maximum operator protection.

Flexibility. Individual plug-in units for maximum operator protection. Complete sections can easily be added, removed or exchanged. Push-buttons, pilot lights, and selector switches can readily be added to unit doors.

Installation Economy. All wiring channels are large and accessible from front without removing units...no "wire fishing."

Space economy, too. Up to six combination starters fit in a 20" x 20" x 90" section. Plug-in unit heights are designed in space-saving increments of 3 inches.

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Kinnear Rolling Fire Doors

All-steel "Akbar" Doors, famous for safety features and labeled by Underwriters Laboratories, Inc.

Kinnear Steel Rolling Grilles

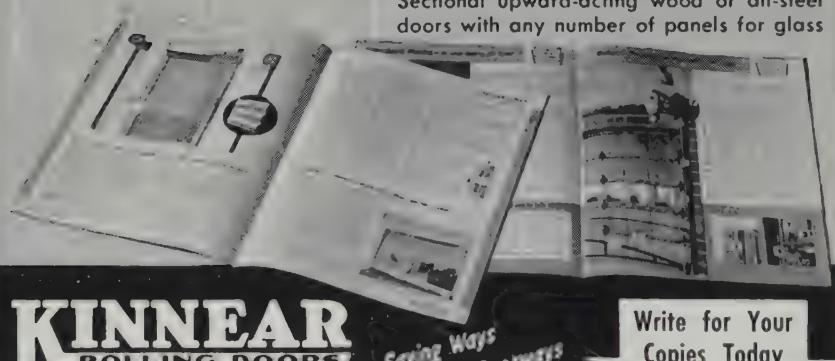
A protective, attractive openwork of steel bars and links—admits light, air and vision

Kinnear Motor Operators

Special rugged motors for time-saving push-button door operation

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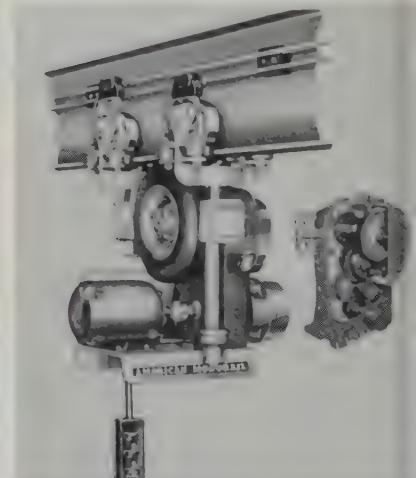
nected in series. Current through the resistor provides inverse feedback equal to 99.8 per cent of the input signal. Current through the transducer winding provides a magnetic force that positions a flap



per-nozzle assembly in the transducer to produce an air relay output proportional to the original direct-current measurement. The output is transmitted to an indicator, recorder or controller. Foxboro Co., Foxboro, Mass. Foxboro 31

Monorail Drive Unit

This precision-built drive unit allows a hoist or other type carrier to be propelled on monorail track. Traction is obtained by spring-loaded contact of the rubber wheel



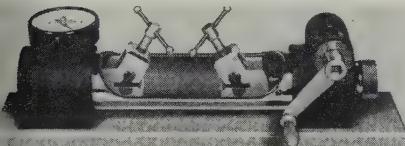
against the bottom of any smooth flange track. Duty-rated, life-time helical gearing is used. Speed range from 35 to 350 fpm; power, from 1

2 hp. Any standard NEMA frame motor and any type motor brake can be used. There is automatic adjustment for tire wear. The motor drive unit is available with fluid drive for cushioned start.

This new unit can meet any type of automatic or power-propelled load transfer on a monorail system. It meets all requirements for constant service, exact delivery cycles, grade travel or the movement of loads up to 5 tons with power consumption and maintenance held to minimum. American MonoRail Co., 13107 Athens Ave., Cleveland 10. Lakewood 1-6000

Portable Tensile Testing Machine

The tester may be used to test strip steel, wire, bolts, screws, spot welds or anything within its 4000-lb capacity. A release knob allows the specimen jaw to be adjusted quickly. A moderate pull on the crank is sufficient to apply the



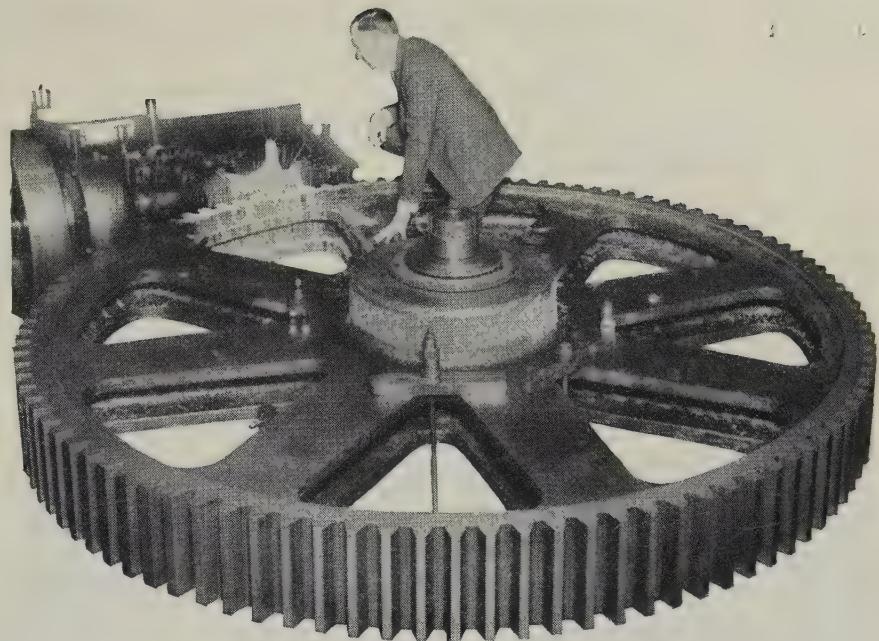
maximum load. Results are read from the load gage on top.

The base of the tester measures 7 x 15 in. The shop device should prove useful to demonstrate tensile strength on sales calls and at trade shows. Detroit Testing Machine Co., 9390 Grinnell Ave., Detroit 13, Mich. Walnut 1-0659

Hot Spray Cuts Production Line Rejects

Uniform viscosity and controlled temperature application provided by the Circaflo 300, hot-spray heater eliminates paint department bottlenecks. Standard industrial finishes give better coverage and have greater life.

The unit combines the advantages of a coilless heat exchanger and the Circaflo pump. (This pump has no bearings or close fitting tolerances to wear and is



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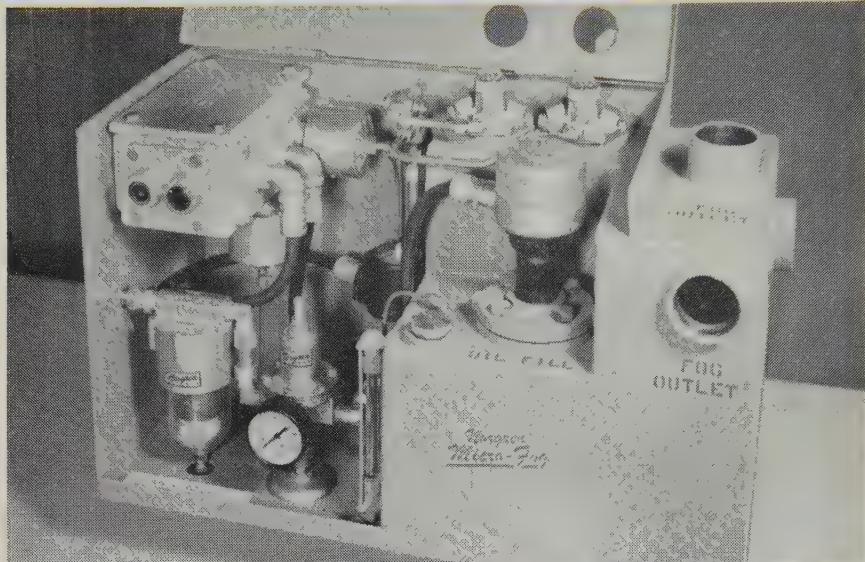
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FOR PRODUCTION MEN

an easy, effective way to
reduce lubrication and maintenance costs
and increase output

NORGREN MICRO-FOG 33AB LUBRO-CONTROL UNIT



Model 33AB-4 lubricates 350 bearings and 170 spur gears on large Cross Transfer-Matic using only 1.6 fl. oz. of oil per hour and 10 cfm. of air.



1. Produces a high concentration of oil fog —provides maximum transmission with minimum air consumption.
2. Capacity to lubricate up to 1000 bearing inches.
3. Produces a fine fog that is uniformly distributed to multiple outlets, assures thorough, dependable lubrication at every bearing surface.
4. Reduces cost of installation and maintenance of bearing and gear box seals.
5. Eliminates the need for many smaller lubricators and complex piping systems.
6. Pressure switches and liquid level controls automatically actuate alarm system or stop machine a) when oil supply reaches a pre-selected low level, b) when air pressure fails, c) when excessive pressure develops in oil supply tank.
7. Solenoid valve starts and stops the Micro-Fog Lubrication system as the machine is turned on and off.
8. Maximum flexibility in control of Micro-Fog: two high capacity lubricator heads may be used simultaneously or individually, depending on fog requirements; oil feed regulated by applied pressure over a wide pressure range.
9. Three 2" Micro-Fog outlets may be used separately or in combination to facilitate connecting and routing of distribution piping. Air inlet is 1/2" pipe size.
10. Rate of oil feed visible through sight feed dome on each lubricator head.
11. Oil gauge on tank visually indicates oil level.
12. Automatic-Drain Filter removes moisture and solids from air line, drains collected moisture automatically, prevents contamination of oil supply.
13. 1" conduit connection serves centrally located water-tight junction box.

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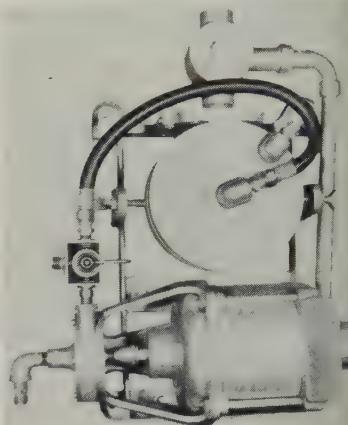


NEW PRODUCTS

and equipment

equipped with a high-powered, 1/4 hp, explosionproof, electric motor.)

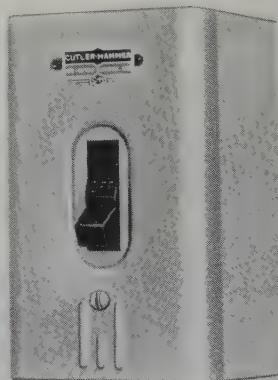
One coat is equal to two con-



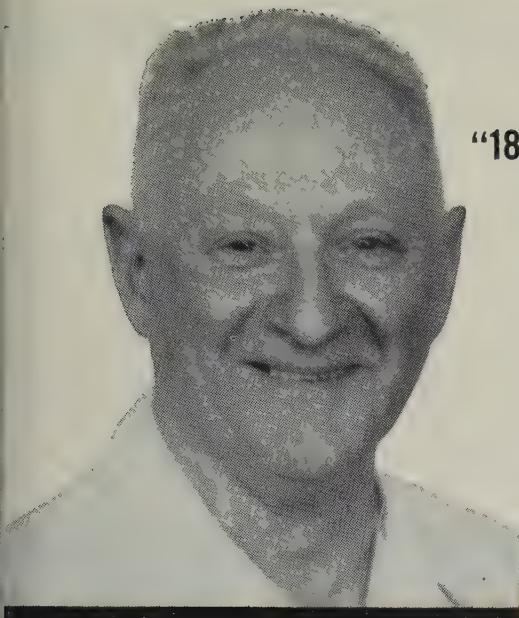
ventional coats. Application is faster and sagproof. Spee-Flo Corp., 720 Polk Ave., Dept. C 12, Houston 12, Tex. Blackstone 0461

Manual Motor Starter for Across-the-line Starting

The starter also provides over-load protection for fractional horsepower motors driving small machine tools, woodworking equipment, fans, blowers and similar machines. Operation is by an "on" and "off" standard-type toggle lever. The toggle mechanism is

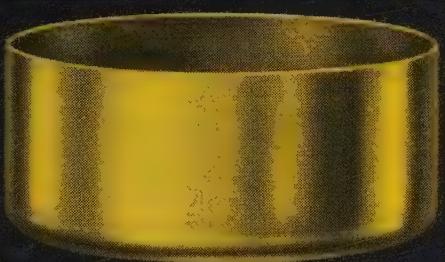


positive acting, producing quick make and quick-break contacts. The snap action, twin-break silver contacts reduce arcing and provide increased contact life. The starter has straight-through wiring with line terminals at the top and load terminals at the bottom. A eutectic alloy thermal overload relay



Joe Vuille says it's simple arithmetic:
"180 cups per min. x 60 min. x 40 hours per week x 5 weeks =

2,160,000 brass cups in one uninterrupted run"



From the cup illustrated actual size above, socket shells are produced in eight operations on special equipment, followed by a stress-relief anneal and a final bright-dip.



Socket shell caps like this are formed in an 8-operation multiple-plunger press at the rate of 86 per minute.

Typical of Leviton's complete line of lampholders is this "Electrolite Push Thru" model. Both shell and cap are made of ANACONDA Brass.

For more than 20 years, Joe has been pressroom foreman of Leviton Manufacturing Company, Brooklyn, N. Y., one of the world's largest manufacturers of electrical wiring devices.

Multi-million production runs of stamped and drawn products are nothing new to Joe, but he'll admit that there's more to it than a multiplication table:

"First," says Joe, "you start with a good product design. Then the toolroom calls on its broad experience in die-making. Next, good equipment and good housekeeping are essential in the pressroom. And then there's the brass: these extra-large coils of brass strip have to be just so . . . in dimension, composition, grain size, temper and surface finish . . . lot after lot after lot . . . tailor-made for the job."

Each year Leviton uses many thousands of pounds of ANACONDA Brass, produced to Leviton's precise specifications, "just so . . . lot after lot after lot . . . tailor-made for the job." Perhaps we can perform a similar service for you? Write to *The American Brass Company, General Offices, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.*

5579

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Reinforcing Rod Plant UPS PRODUCTION 300%

Cleveland Tramrail System Pays For Itself In 6 Months

AFTER a reinforcing rod plant built a new building and equipped it with Cleveland Tramrail cranes, manufacturing costs took such a nose dive that they would make any cost-conscious plant manager blink with amazement.

Whereas eight men were required to work 8 hours to unload a 50-ton car of rods in the old building, two men using Tramrail cranes now do the job in 30 minutes. The Tramrail equipment has enabled doubling the production, and at the same time reducing man-hours by one-half. In other words, the produc-

tion per man-hour is four times what it formerly was.

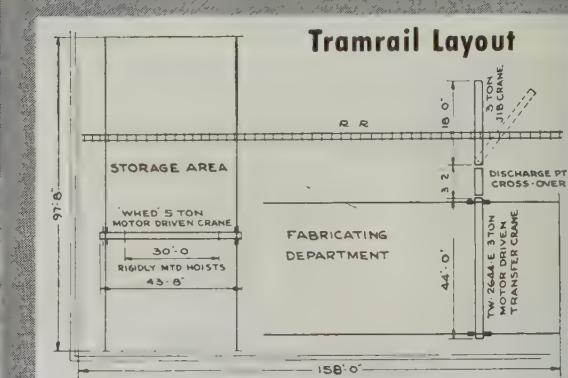
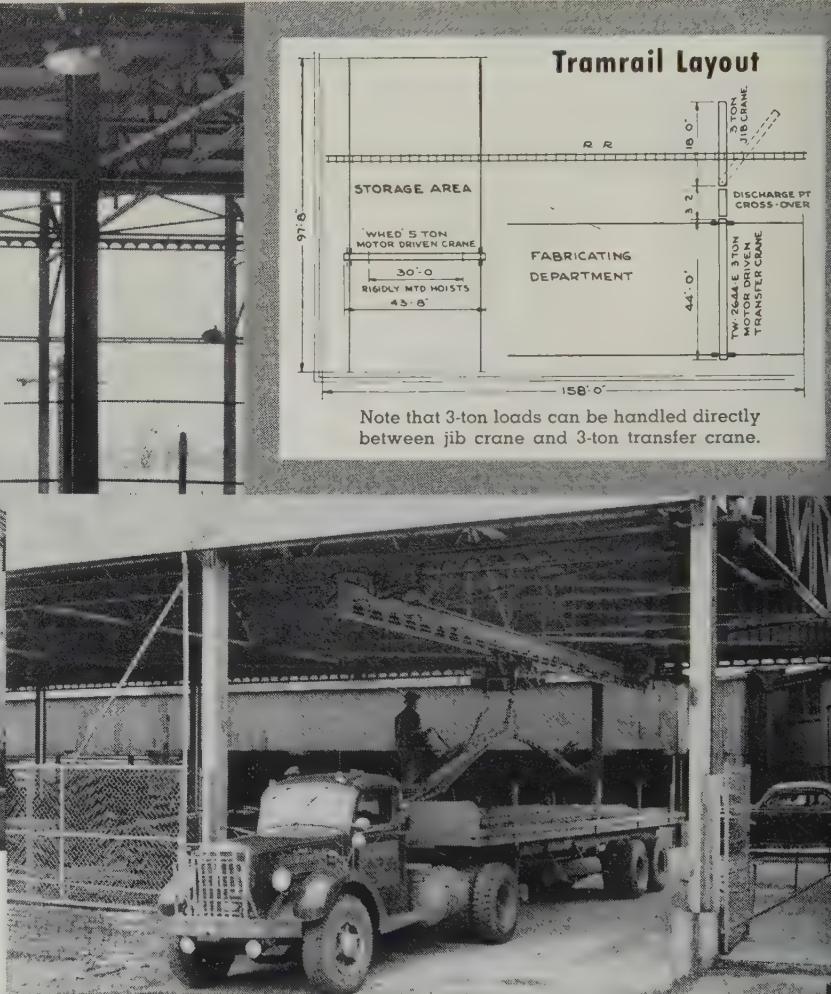
The savings have been so phenomenal that the entire Tramrail system was paid for in the first six months of operation.

Nearly every industry is securing important advantages with Cleveland Tramrail equipment. A nearby Tramrail sales engineer will gladly suggest ways that savings can be made in your plant.



5-ton crane handles 60'-0" long bundles of rod from railroad car to storage and to shear.

Outgoing truck is quickly loaded with 3-ton crane.



Note that 3-ton loads can be handled directly between jib crane and 3-ton transfer crane.

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THE CLEVELAND CRANE & ENGINEERING CO.
7803 East 290th Street, WICKLIFFE, OHIO.

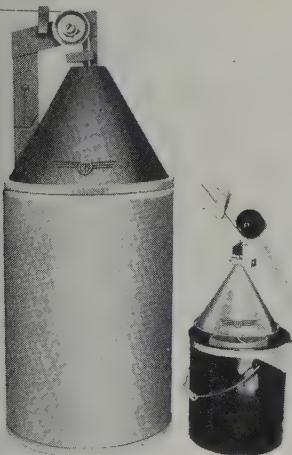
CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

th inverse time limit features is fered in both double and single poles, open and enclosed types.

The case and cover are bonder ed for lifetime rust resistance. knockouts for $\frac{1}{2}$ -in. conduits are cluded in both top and bottom. The open type has the starter mechanism in a molded phenolic shell. Wires can be run around it. The enclosed starter is recommended for general applications where other enclosures are not pro duced. The open type is suited for machine cavity mounting, back of ate mounting and wall mounting in a standard (Handy or Gem) out t box. Cutler-Hammer Inc., 320 12th St., Milwaukee, Wis. roadway 1-7800

De-reeling Device Pays Off Soft, Nonferrous Material

It can be attached to the top of 20-in.-diameter drum (500-lb ca cacity) or to a conventional 5-gal ail (100 lb-capacity) loaded with ire in one continuous strand. Con cal in shape, the devices are ro vided with adjustable tension heaves which permit the de-reeling of fine or heavy wire from the



containers at high or low speeds.

This method makes it possible for wire users to wind such items as motor coils at approximately twice the speeds of present opera tions. There is freedom from tan gle. Coulter & McKenzie Machine Co., Bridgeport, Conn. Edison 5-1101



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Division of Buffalo-Eclipse Corporation

NORTH TONAWANDA, N. Y.

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NEW Literature

Write directly to the company for a copy

Nickel-Copper Alloy Steels

This catalog covers applications of high-strength, low-alloy steels in transportation, bridge construction, mining, agriculture, marine equipment and other fields—48 pages. International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.

Colloidal Graphite

Electric-furnace graphite of high purity, when processed to colloidal size and dispersed in a suitable carrier, is an effective surface coating for many mechanical devices. "Colloidal Graphite for Surface Coatings and Impregnation" lists ways the product is used with a variety of materials, including porous minerals, cloth, felt, leather, asbestos and paper—bulletin 435, 6 pages. Acheson Colloids Co., division, Acheson Industries Inc., Port Huron, Mich.

Material Handling

This bulletin includes illustrations of modern industrial trucks with latest material-handling attachments. Discussed are: The unit-load principle, power requirements of industrial trucks and characteristics of Edison nickel-iron-alkaline storage batteries—32 pages. Thomas A. Edison Inc., Edison Storage Battery Div., West Orange, N. J.

Drop Forgings

This brochure shows how designers can utilize closed-impression drop forgings for intricately shaped parts as large as 10,000 lb. Increased latitude in the design of large parts made possible with Ladish's powerful forging hammer—Ladish Co., Dept. FR, Cudahy, Wis.

Ground Thread Taps

Revised standards are explained. The changes meet requirements of industry and the federal services. Tables detail new limits, the relationship between the old and new and their application to a specific size and class of thread tolerance—bulletin No. T-583, 25 pages. Pratt Whitney, division, Niles-Bement-Pond Co., West Hartford 1, Conn.

Battery Line

Here are the specifications on the PlastiCell battery. Data on ratings and capacities, details of design and construction, dimensions, weights and types of containers are included—bulletin T-527/55, 4 pages. C & D Batteries Inc., Conshohocken, Pa.

Tools and Blanks

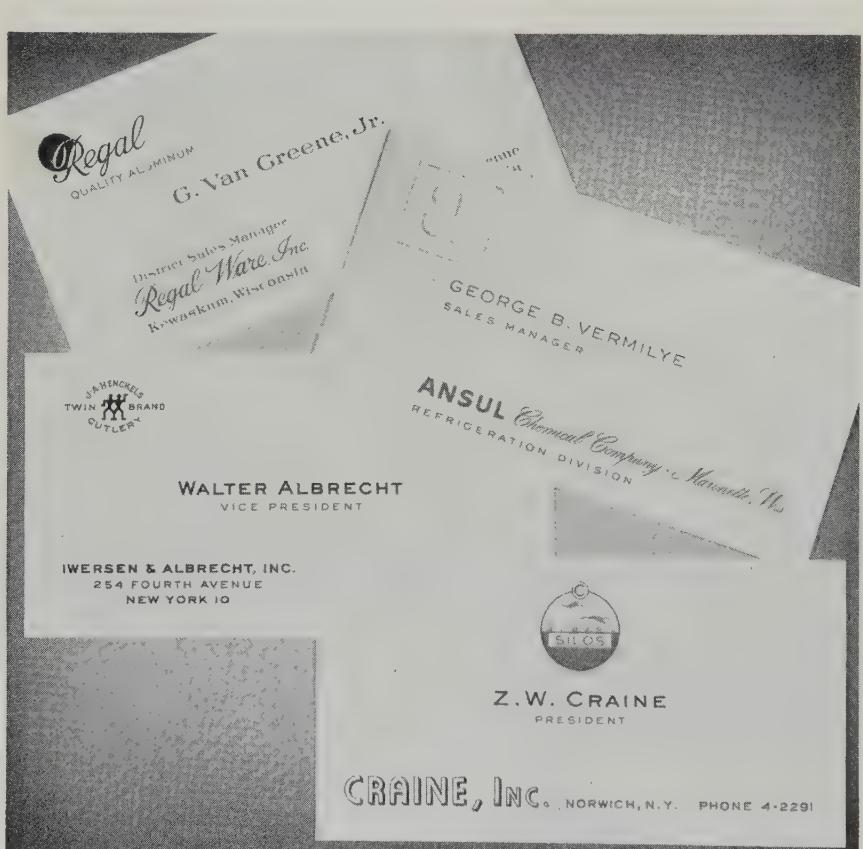
This manual aids users of Carmet cemented carbides in the selection, fabrication and application of tools and blanks. Descriptions of grades, instructions and drawings covering all operations and tool types are included—19 pages. Allegheny Ludlum Steel Corp., Carmet Div., Detroit 2, Mich.

Hob List

Brad Foote Gear shows how its hobs, cutters and broaches can do almost any gear cutting job without additional tools—56 pages. Brad Foote Gear Works Inc., 1309 S. Cicero, Cicero 50, Ill.

Magnesium

"The Magnesium Industry's Broadest Scope of Services in Fabricating, Assembling and Finishing" shows the company's facilities for working titanium and magnesium. Commercial products are shown, and relative



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W LITERATURE

lights of common metals are given 3 pages. Brooks & Perkins Inc., 30 W. Fort St., Detroit 16, Mich.

Hammer Catalog

Nazel hammers for every requirement are displayed. Specifications, installations and applications are included—20 pages. Lobdell United Inv., United Engineering & Foundry Co., Wilmington 99, Del.

Leasing Trucks

Here are the pros and cons of industrial truck leasing. Working capital, tax considerations, leasing or borrowing capital are among the subjects covered—4 pages. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, O.

rod and Wire Products

Here are weight tables, specifications and other technical data on several materials—Titan, free-cutting brass, commercial bronze, Ti-nic-o-sil, combasil, forging rods and shapes, brass wire and Tru Shaft boat shafting. "For Your Metal Money's Worth" illustrates the products described—10 pages. Titan Metal Mfg. Co., Customer Service Div., Bellefonte, Pa.

Wet Blasting

"A New Source of Profits for Heat Treat Shops" tells how to remove scale from precision work. Pictures show nine parts cleaned in Liquamate machines. Performance data are given for each—bulletin No. 123, 10 pages. American Wheelabrator & Equipment Corp., 1157 S. Byrkit St., Mishawaka, Ind.

Welding Stainless

Presented for the most part in question-and-answer form, "The Welding of Stainless Steels" describes types and properties of steels, practical welding procedures and types of electrodes available—48 pages. McKay Co., 330 McKay Bldg., 1005 Liberty Ave., Pittsburgh 22, Pa.

Carbide Prices, Specs

This book features "Throw-Away" insert blanks, each size in two thicknesses. It covers standard tools and blanks—16 pages. Adamas Carbide Corp., Kenilworth, N. J.

Extruded Parts

Special headed and threaded parts are produced economically in quantity by single or double extrusion, says "Specials . . . by Specialists."

Examples of parts are illustrated and various methods of procedure explained—4 pages. Cleveland Cap Screw Co., 2917 E. 79th St., Cleveland 4, O.

Electric Conductor Accessories

Know how to select and install accessories that go with aluminum wires and cables in overhead electric transmission and distribution lines? This guide has chapters on joints, dead ends, suspension clamps and tie wire, connectors, armor rods and vibration dampers—12 pages. Rey-

nolds Metals Co., Division PR, 2500 S. Third St., Louisville 1, Ky.

Heat Treating Steel

"The Homocarb Method with Microcarb Atmosphere Control for Heat Treatment of Steel" describes this equipment's performance. Operations include case carburizing, carbon restoration, homogeneous carburizing and the hardening of steel products on a reproducible, mass-production basis—catalog TD4-620(1), 20 pages. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa.

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THE FERRY CAP countr-bor SCREW

A NEW, REVOLUTIONARY DESIGN
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OFFERING THESE NOTEWORTHY ADVANTAGES:

- 1 Takes standard 12-point socket wrench.
- 2 External wrenching instead of internal.
- 3 Stronger—more gripping surface.
- 4 Permits greater wrenching torque.

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In brief—a quality product which will do everything required of socket head screws—and more. For all counterbore applications.

Wherever the Ferry Cap Countr-Bor Screw has been tried, users are enthusiastic—saying that these screws are a service man's dream and the best development in socket screws in recent years. They will help you lick tough assembly problems where socket screws are required.

We shall be glad to send samples, prices and complete information promptly upon request.

Ferry Cap Countr-Bor Screws

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2159 Scranton Road

• Cleveland 13, Ohio

May 9, 1955

Market

Outlook

THE strong upward swing in steel production carried tonnage output to a new high—2,328,800 net tons of steel for ingots and castings in the week ended May 8. Previous weekly record was 2,324,000 tons in the week ended Mar. 29, 1953.

The new weekly record for tonnage was established without a record in percentage of operations. Rate in the week ended May 8 was 96.5 per cent of capacity. There were times when operations exceeded 100 per cent of capacity. Today's record capacity makes it possible to set new tonnage records when operations are below that figure.

FEAST OR FAMINE—Record steel output in peacetime is giving rise to talk of further expansion in capacity. Present capacity might suffice for several years if the steel industry were not susceptible to wide swings in demand. Steel ingot production is 38 per cent above what it was a year ago. Industry as a whole has not gone up that much. STEEL's industrial production index is up only 25 per cent. The Federal Reserve Board's latest industrial production index (March) is up only 10 per cent over March, 1954.

BELOW THE AVERAGE—When production was going down a year ago, steel ingot output was off 25 per cent, compared with the comparable time of 1953, yet STEEL's industrial production index was down only 14 per cent; the FRB index, down 9 per cent.

ACCELERATED BY AUTOS—Contributing substantially to the strong upward swing in the steel industry is automobile production. It, too, is setting new high records. Currently, auto

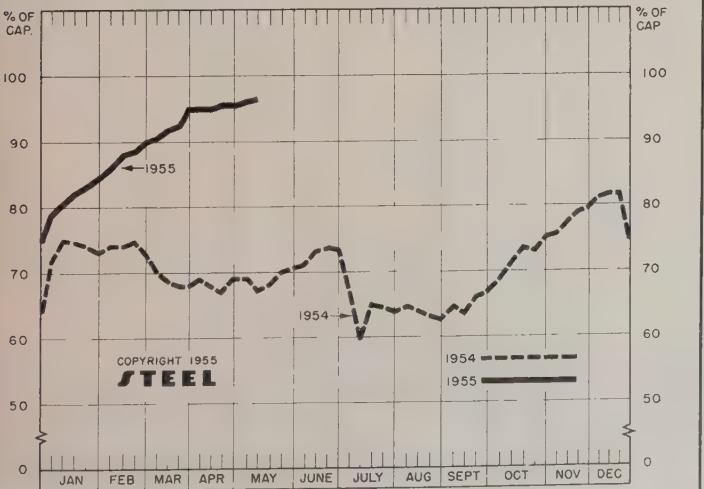
output is 47 per cent above that of a year ago. The auto industry is not only the largest user of steel, but it is taking an increased percentage of it. Ordinarily, it gets about 20 per cent of the steel. Now it is taking around 25 per cent. This means the auto industry is buying 25 per cent more steel than it usually does—one good reason why steel output is so high. Another good reason is high activity in construction.

FOUNTAINS OF OPTIMISM—The high rates of operations in the steel, auto and construction industries have spread optimism and confidence throughout the economy, and generated demand from other industries for steel.

PRODUCT ROUNDUP—Demand for cold-rolled carbon steel sheets, silicon sheets, galvanized sheets, enameling sheets and other coated sheets continues to be strong, and bookings extend to September. Order backlog of stainless sheets is growing. Plate order books have tightened further, and most producers are booked through July. Little structural tonnage, particularly wide flange, is available before August. Bar buying is accelerating, and July order books are nearly filled. Orders for wire are improving, but they still are geared close to consumption. Line pipe is in strong demand, but some of the smaller forms, like merchant pipe, are in easier supply than some other products.

HINT OF THE FUTURE—Prices in the scrap market hint a decline is in store for steel production. For the third consecutive week, STEEL's price composite on steelmaking grades of scrap went down. Latest price is \$35.33 a gross ton, compared with \$36 for the preceding week.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended May 8	Change	Same Week 1954	Same Week 1953
Pittsburgh	99	+ 1*	67.5	93
Chicago	99	- 2*	79.5	106.5
Mid-Atlantic	96.5	0	56	97.5
Youngstown	98	+ 2	68	106
Wheeling	95.5	0	83.5	101
Cleveland	100.5	+ 2.5*	76	101.5
Buffalo	104.5	0	67.5	106.5
Birmingham	93.5	0	56.5	102
New England	88	- 2	55	92
Cincinnati	93.5	+ 1	61.5	97.5
St. Louis	106.5	+ 8.5	72.5	92
Detroit	91.5	- 0.5	63	108
Western	98	+ 6*	72	109
National Rate ..	96.5	+ 0.5	67	100

INGOT PRODUCTION*

	Week Ended May 8	Week Ago	Month Ago	Year Ago
INDEX	144.9†	143.6	143.2	103.0
(1947-1949=100)				
NET TONS	2,328†	2,307	2,300	1,654
(In thousands)				

*Change from preceding week's revised rate.
†Estimated. †Amer. Iron & Steel Institute.
Weekly capacity (net tons): 2,413,278 in 1955: 2,384,549 in 1954; 2,254,459 in 1953.

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	May 3 1955	Apr. 26 1955	Month Ago	Apr. Average
(1947-1949=100)	144.8	144.8†	144.7	144.8

†Revised.

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended May 3

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1 ...	\$4.525	Sheets, Electrical	\$9.350
Rails, Light, 40 lb	5.917	Strip, C.R., Carbon	7.493
Tie Plates	5.275	Strip, C.R., Stainless, 430 (lb)	0.415
Axles, Railway	7.500	Strip, H.R., Carbon	5.075
Wheels, Freight Car, 33 in. (per wheel)	48.500	Pipe, Black, Butt-weld (100 ft)	15.000
Plates, Carbon	4.675	Pipe, Galv., Butt-weld (100 ft)	18.605
Structural Shapes	4.517	Pipe, Line (100 ft)	148.804
Bars, Tool Steel, Carbon (lb)	0.430	Casing, Oil Well, Carbon (100 ft)	154.216
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.525	Casing, Oil Well, Alloy (100 ft)	227.875
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75 Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Tubes, Boiler (100 ft)	†
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4 V 1 (lb)	1.610	Tubing, Mechanical, Car- bon	†
Bars, H.R., Alloy	8.875	Tubing, Mechanical, Stain- less, 304 (100 ft)	†
Bars, H.R., Stainless, 303 (lb)	0.423	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Carbon	5.000	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, Reinforcing	4.963	Black Plate, Cannaking Quality	6.333
Bars, C.R., Carbon	8.160	Wire, Drawn, Carbon	8.075
Bars, C.R., Alloy	11.375	Wire, Drawn, Stainless, 430 (lb)	0.545
Bars, C.R., Stainless, 302 (lb)	0.438	Bale Ties (bundle)	5.860
Sheets, H.R., Carbon	4.870	Nails, Wire, 8d Common	7.815
Sheets, C.R., Carbon	5.884	Wire, Barbed (80-rod spool) 7.127	
Sheets, Galvanized	7.220	Woven Wire Fence (20-rod roll)	16.925
Sheets, C.R., Stainless, 302 (lb)	0.553	†Not available.	

STEEL's FINISHED STEEL PRICE INDEX*

	May 4 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 avg.=100) ..	194.53	194.53	194.53	189.74	156.13
Index in cents per lb	5.270	5.270	5.270	5.140	4.230

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	\$118.45	\$118.45	\$118.45	\$113.70	\$93.23
No. 2 Fdry, Pig Iron, GT..	56.54	56.54	56.54	56.54	46.47
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.97
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	35.33	36.00	37.41	27.83	30.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	May 4 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.42
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.42
Bars, H.R., deid. Philadelphia	4.55	4.55	4.55	4.405	3.92
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	4.10-4.1
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.40
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.40
Shapes, deid. Philadelphia	4.53	4.53	4.53	4.38	3.42
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.50
Plates, Chicago	4.225	4.225	4.225	4.10	3.50
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.10	3.60
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.50
Plates, Claymont, Del.	4.225	4.225	4.225	4.10	3.6
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.3
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.3
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.30
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pittsburgh	4.05	4.05	4.05	4.425	3.20
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.20
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45	4.12
Strip, C.R., Chicago	5.85	5.85	5.85	5.70	4.30
Strip, C.R., Detroit	5.90	5.90	5.90	5.65	4.35-4
Wire, Basic, Pittsburgh	5.75	5.75	5.75	5.525	4.50
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.55	5.30
Tin Plate (1.50 lb), box, Pitts.	\$9.05	\$9.05	\$9.05	\$8.95	\$7.50

SEMITRANSHISHED STEEL

Billets, Forging, Pitts. (NT)	\$78.00	\$78.00	\$78.00	\$75.50	\$63.00
Wire Rods, 3/8-1/2" Pitts.	4.675	4.675	4.675	4.525	3.8

PIG IRON, Gross Ton

Bessemer, Pitts.	\$57.00	\$57.00	\$57.00	\$57.00	\$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deid. Phila.	59.66	59.66	59.66	59.66	49.44
No. 2 Fdry, Pitts.	58.50	58.50	58.50	58.50	46.50
No. 2 Fdry, Chicago	58.50	58.50	58.50	58.50	46.50
No. 2 Fdry, Valley	58.50	58.50	58.50	58.50	46.50
No. 2 Fdry, deid. Phila.	55.16	55.16	55.16	60.16	49.94
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	42.38
No. 2 Fdry (Birm.) deid. Cin.	60.58	60.58	60.58	60.43	49.08
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.00

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	\$35.50	\$35.00	\$38.50	\$28.50	\$36.00
No. 1 Heavy Melt, E. Pa.	36.50	37.50	37.75	23.00	28.50
No. 1 Heavy Melt, Chicago	34.00	35.00	36.00	30.50	30.50
No. 1 Heavy Melt, Valley	34.50	35.50	37.50	29.50	35.25
No. 1 Heavy Melt, Cleve.	31.50	33.50	35.00	26.50	31.75
No. 1 Heavy Melt, Buffalo	30.50	32.50	32.50	25.50	29.75
Rails, Reroiling, Chicago	52.50	52.50	52.50	41.00	48.50
No. 1 Cast, Chicago	40.50	40.50	41.50	38.50	42.50

COKE, Net Ton

Beehive, Furn, Connsvl.	\$13.75	\$13.75	\$13.75	\$14.75	\$14.25
Beehive, Fdry, Connsvl.	16.75	16.75	16.75	16.75	16.00
Oven, Fdry, Chicago	24.50	24.50	24.50	24.50	21.00

Quotations in cents per pound based on COPPER, deid. Conn. Valley; LEAD, common grade, deid. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deid. New York; NICKEL, electrolytic cathodes, 99.9%, base size; refinery, unpacked; ALUMINUM, primary ingots, 99+, deid.; MAGNESIUM, 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

• A source of price information.

Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.

• A directory of producing points.

Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.

• A source of price data for making your own comparisons. Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.

• A source of information on market trends.

Newspaper items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.

• Reports on iron and steel production, and materials and product shipments.



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Immediate savings in production costs are made by switching from the old shoulder machining method to Reliance Snap Rings. The old method made it necessary to machine the entire length of an oversized shaft to form a shoulder. Now it can be done simply and easily by milling a groove and snapping in a Reliance Ring on a standard size shaft. Machining time, money and material are saved at no sacrifice in product quality or performance. Wherever you are mounting gears or bearings, consider the cost reducing features of Reliance Snap Bearing, Lock and Retainer Rings. You can't lose anything and may save a lot. Write for free Engineering Bulletin 4K3.

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Nonferrous Metals

Demand for nonferrous metals remains at unprecedented high levels. Even if autoworkers strike this summer, the metal-hungry market would not fall apart

Nonferrous Metal Prices, Pages 122 & 123

AT THE HALFWAY MARK in the second quarter, producers of nonferrous metals are finding they probably never had it so good from the viewpoint of demand in an uncontrolled economy. There is still much to be desired in terms of supply, but with definite indications that the two are coming into balance at last, about the only real problem facing the metals industry is coming labor talks.

Demand for copper, aluminum, lead and zinc continues to hold at unprecedented levels. Threat of an autoworkers' strike this summer has not damped forward buying in any of these metals, which is some indication of confidence in a peaceful settlement of current contract negotiations. Or it may be an indication that too much importance has been placed on the role of the auto industry in our metals economy.

Just Supposin'—Suppose the autoworkers went on strike for a month. At present rates that would represent about 700,000 units lost to production. At 43 lb of copper per car, that would mean about 15,000 tons would not be consumed by automakers. That tonnage would be gobbled up by other copper users like a steak before a starving man.

Estimates for the amount of aluminum in the average 1955 model vary. If we settle for about 20 lb, loss of a month's production in motordom would free about 7000 tons of aluminum for other uses. That's not much when you consider that many industry men thought the recent governmental release of 75,000 tons was insufficient to ease the shortage.

Still Charged Up—Lead would lose some of its current activity, but the battery industry—the big automotive user of lead—wouldn't notice it too much. The loss would be about 700,000 batteries, a drop in the bucket for a market anticipating almost 32 million units this year.

As for zinc, the loss would be felt probably more than the others because of the push the industry is putting on diecastings for auto front-end treatment this year. However, at about 20 lb of zinc per car, the loss would be only about 7000 tons out of a total diecasting market estimated at 285,000 to 300,000 tons this year.

At that, the letup might give pro-

ducers a chance to catch up on the supply end. Stocks of special high-grade zinc are practically non-ex-

STEEL's Metal Price Averages for April, 1955

(Cents per lb)

Electrolytic Copper, del'd.	
Connecticut	36.000
Lead, St. Louis	14.800
Prime Western Zinc,	
E. St. Louis, Ill.	11.927
Straits Tin, New York	91.458
Primary Aluminum	
Ingots, del'd.	23.200
Magnesium, Freeport,	
Tex.	28.500
Nickel, f.o.b. refinery	64.500

istent. At the American Zinc Institute meeting, one producer estimated his special high-grade stocks amounted to 8 hours, "and that's no stock at all," he said. Consumers other than auto suppliers also are screaming for the metal and might be glad to see an extra 700 tons on the market.

This is not by way of begging for a strike in the auto industry. Nobody would profit by it. The indirect effect would be serious. But the bottom would not fall out of the market if it happened.

Copper Stability Coming?

May 2, 1955, could well be referred to in the future as the day stability was restored to the copper market. That could be the ultimate effect of the decision of the Rhodesian Selection Trust group of companies to sell copper at fixed prices to United Kingdom customers. Roan Antelope Copper Mines Ltd. and Mufulira Copper Mines Ltd. supply about one-third of Great Britain's copper. Even though the Rhokana group has not followed suit, if a third of the London market were stable, it would be a damper on any future gyrations of copper's price on the London Metal Exchange.

The immediate effects of the action were unknown at presstime. The London price of copper had been edg-

ing down for several days preceding the announcement, forward copper coming within a cent and a half of the domestic price of 36 cents a pound. The copper companies gave as reasons for the move the wide disparities between the London and U. S. price and the danger of such fluctuations to copper's competitive position with aluminum. Perhaps the sliding London price was an important element too. The fixed price was not announced by the middle of last week.

Aluminum Setaside Down

Aluminum setasides for defense use in the third quarter will be slightly less than in the second quarter, Business & Defense Services Administration announced. Producers have been instructed to reserve 133 million lb of sheets, bars, rods and other metal products to cover defense and atomic energy orders in September, October and November. Setasides for the second quarter were 135 million lb. The third-quarter reserve represents about 15 per cent of the total anticipated mill supply during that period.

Opinions Differ on Zinc Price

A well-known producer of lead and zinc told STEEL that producers would like to see a combined price of 28 cents for the metals—15 cents for lead and 13.5 cents for zinc. With the proper pressure, this official thinks zinc could go up at any time to 12.5 cents. "You could sell just as much zinc today at 12.5 cents as you can at 12," he claimed.

Simon D. Strauss, vice president of American Smelting & Refining Co., told lead and zinc producers in Chicago that any material increase in the zinc price would damage the industry. David Laine, secretary of the American Die Casting Institute, said that operation in that industry would be adversely affected by such an increase.

Market Memos

- Aluminum Co. of America increased its quantity extra charge for sheet and plate by 0.2 to 1 cent a pound to offset higher production costs.

- Nathan Trotter & Co. brands false four of the five conclusions reached by the Senate committee which recommended continuation of operations at the Texas City, Tex., tin smelter.

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Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 23.20, pigs 21.50, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 25.00; No. 43, 5% Si, 24.80; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 26.20; No. 195, 4.5% Cu, 0.8% Si, 25.50; No. 214, 3.8% Mg, 26.20; No. 356, 7% Si, 0.3% Mg, 24.90.

Antimony: R.M.M. brand, 99.5%, 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, \$40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: \$2.25 per lb, ton lots.

Cadmium: Sticks and bars, \$1.70 per lb, deld.

Cobalt: 97-99%, \$2.60 per lb for 550-lb keg; \$2.62 per lb for 100-lb case; \$2.67 per lb under 100 lb.

Columbium: Powder, \$119.20 per lb, nom.

Copper: Electrolytic 36.00 deld, Conn. Valley; 36.00 deld, Midwest; Lake 36.00 deld; Fire refined 35.75 deld.

Germanium: 99.9%, \$295 per lb, nom.

Gold: U. S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz.

Iridium: \$90-\$120 nom. per troy oz.

Lead: Common 14.80, chemical 14.90, corrodng 14.90, St. Louis; N. Y. basis, add 0.20.

Lithium: 99 + %, \$13-\$18, f.o.b. Minneapolis, depending on quantity and form. For rod, add \$2 a lb; for wire, add \$3 a lb.

Magnesium: 99.8%, self-palletizing pig 28.50; notched ingot 29.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingot; for Los Angeles, add 2.50 for both pig and ingot. Sticks 1.3 in. diameter, 49.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 34.00; alloy M 36.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, \$315-\$318 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced \$3-\$3.25 per lb; pressed ingot \$4.06 per lb; sintered ingot \$5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked \$4.50; 10-lb pigs, unpacked \$7.65; "XX" nickel shot 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: \$120-\$130, nom., per troy oz.

Palladium: \$17-\$20 per troy oz.

Platinum: \$76-\$80 per troy oz from refineries.

Radium: \$16-\$21.50 per mg radium content, depending on quantity.

Rhodium: \$118-\$125 per troy oz.

Ruthenium: \$45-\$55 per troy oz.

Selenium: 99.5%, \$6-\$7.25 per lb.

Silver: Open market, 87.00 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Sheet, rod \$68.70 per lb; powder \$56.63 per lb.

Tellurium: \$1.75 per lb.

Thallium: \$12.50 per lb.

Tin: Straits, N. Y., spot, 91.375; prompt, 91.25.

Titanium: Sponge, 99.3 + %, grade A-1 ductile (0.3% Fe max) \$3.95, grade A-2 (0.5% Fe max) \$3.50 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots \$4.35-\$4.40 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99 + % hydrogen reduced, \$4.65. Treated ingots, \$6.70.

Zinc: Prime Western, 12.00; brass special, 12.25; intermediate, 12.50, E. St. Louis, freight allowed over 0.50 per pound. High grade, 13.35; special high grade, 13.50. Diecasting alloy ingot No. 3, 16.00; Nos. 2 and 5, 16.50.

Zirconium: Sponge \$10 per lb; powder electronics grade \$15, flash grade \$11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloy, 28.50-29.50; No. 12 foundry alloy (No. 2 grade), 27.25-28.50; 5% silicon alloy, 0.60 Cu max, 29.25-30.25; 13 alloy, 0.60 Cu max, 29.25-30.25; 195 alloy, 29.00-30.25; 108 alloy, 28.00-29.00. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 28.25-29.00; grade 2, 27.25-28.50; grade 3, 26.50-28.00; grade 4, 25.00-27.50.

Brass Ingot: Red brass No. 115, 35.50; tin bronze No. 225, 47.50; No. 245, 40.75; high-leaded tin bronze No. 305, 39.00; No. 1 yellow, No. 405, 30.75; manganese bronze No. 421, 33.25.

Magnesium Alloy Ingot: AZ63A, 31.00; AZ91B, 26.00; AZ91B, 31.00; AZ92A, 31.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, \$1.74; rod, bar, wire, \$1.71.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 41.35-42.45; 30,000-lb lots, 41.48-42.58; l.c.l., 41.98-43.08. Weatherproof, 100,000 lb, 40.78-41.60; 30,000 lb, 41.03-41.85; l.c.l., 41.53-42.35. Magnet wire deld, 15,000 lb or more, 48.15-49.31; l.c.l., 48.90-50.06.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more \$20 per cwt; pipe, full coils \$20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$10; forging billets, \$9; hot-rolled and forged bars, \$9.

ZIRCONIUM

Plate \$27; H.R. strip \$28; C.R. strip \$35; forged or H.R. bars \$27; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks		65	...

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or —Round— —Hexagonal— across flats 2011-T3 2017-T4 2011-T3 2017-T4

Drawn

0.125	63.5	62.0	...	...
0.156-0.172	53.9	52.3	...	...
0.188	53.9	52.3	...	66.8
0.219-0.234	51.1	49.5	...	...
0.250-0.281	51.1	49.5	...	63.7
0.313	51.1	49.5	...	60.8

Cold-finished

0.375-0.547	49.9	47.5	59.8	57.2
0.563-0.688	49.9	47.5	56.9	53.7
0.750-1.000	48.7	46.3	52.1	50.6
1.063	48.7	46.3	...	48.9
1.125-1.500	46.9	44.6	50.4	48.9

Rolled

1.563	45.7	43.4
1.625-2.000	45.1	42.8	...	47.2
2.125-2.500	44.0	41.7

2.563-3.375	42.7	40.5
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THAI

BRASS MILL PRICES

MILL PRODUCTS a

Sheet, Strip, Plate	Rod	Wire	Tube	Seamless	Clean Heavy	Rod Ends	Clean Turning
Copper	54.76b	52.36c	...	54.82	32.000	32.000	31.250
Yellow Brass	46.27	46.21d	46.81	49.18	23.875	26.625	22.000
Red Brass, 85%	50.99	50.93	51.53	53.80	28.125	27.875	27.375
Low Brass, 80%	49.75	49.69	50.29	52.58	27.000	26.750	26.750
Naval Brass	49.99	44.30	57.05	53.15	22.125	21.875	21.375
Com. Bronze, 90%	52.78	52.72	53.32	55.34	29.250	29.000	28.500
Nickel Silver, 10%	60.20	62.53	62.53	...	27.625	27.375	13.812
Phos. Bronze, A, 5%	73.03	73.53	74.71	32.250	32.000	31.000	30.125
Silicon Bronze	58.82	58.01	58.88	60.80e	31.125	30.875	30.125
Manganese Bronze	53.73	47.83	58.24	...	22.125	21.875	21.375
Muntz Metal	48.14	43.95	...	...	22.375	22.125	21.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more.

b. Hot-rolled. c. Cold-drawn.

d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point.

On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Shipping

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finish (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Flat Sheet	Sheet Circles*	Coiled Sheet	Coiled Circle Sheet
0.249-0.136	35.9	40.4	...	...
0.135-0.096	36.4	41.3	...	...
0.095-0.077	37.1	42.3	34.8	39.8
0.076-0.061	38.2	43.6	35.1	40.5
0.060-0.048	38.7	44.5	35.6	40.3
0.047-0.038	39.1	45.0	36.0	41.1
0.037-0.030	39.1	45.5	36.3	41.3
0.029-0.024	39.7	45.5	36.3	41.3
0.023-0.019	40.4	46.9	37.1	42.4
0.018-0.017	41.2	47.7	37.7	42.4
0.016-0.015	42.1	48.7	38.5	44.1
0.014	43.1	49.4	39.5	44.8
0.013-0.012	44.3	50.9	40.2	45.7
0.011	45.3	52.5	41.4	46.8
0.010-0.009	46.5	54.0	42.5	47.0
0.009-0.0085	47.8	55.3	43.6	47.9
0.008-0.0075	49.4	56.9	44.0	51.4
0.007	50.9	58.7	44.9	56.4
0.006	52.5	59.6	45.6	56.4

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	34.6	38.8
5050-F	35.7	39.9
3004-F	36.7	41.6
5052-F	38.4	43.4
6061-T6	39.6	44.0
2024-T4	41.8	47.9
7075-T6	49.6	56.2

*24-48 in. widths or diam., 72-180 in. lengths.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 97.00-0.064-in. 76.00, 0.125-in. 61.50, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled AZ31, 59.00, 30,000 lb or more, 0.250 in. and over, widths to 48 in. lengths to 144 in.; raised pattern floor plate 62.00, 30,000 lb or more, ¼-in. thick, width 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.00-72.00. Tubing, 1 in. OD x 0.065 in. 66.50. Angles, 1 x 1 x ½-in., 75.90; 2 x 2 in. 90.00. Channels, 5 in., 70.90. I-beams ¾-in., 70.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 17.00-18.50; 0.50 sheet, 13.50-16.00; borings and turnings, 9.50-10.00; crankcases, 13.50-16.00; industrial casings, 13.50-16.00.

Copper and Brass: No. 1 heavy copper and
copper, 29.50-30.50; No. 2 copper, 28.00-29.50;
light copper, 26.00-27.50; No. 1 composition red
brass, 25.00-25.50; No. 1 composition turnings,
0.02-0.40; yellow brass turnings, 16.00; new
brass clippings, 21.00-22.00; No. 1 brass rod
turnings, 18.50-20.00; light brass, 16.00-16.50;
heavy yellow brass, 17.50-18.50; new brass rod
turnings, 19.00-21.00; auto radiators, unsweated,
15.00-19.00; cocks and faucets, 19.00-21.00;
brass pipe, 19.00-21.00.

Lead: Heavy, 11.50-11.75; battery plate, 6.00-
7.50; linotype and stereotype, 13.50-14.25; elec-
totype, 12.00-12.50; mixed babbitt, 12.00-14.00.
Magnesium: Clippings 18.50-19.50; clean cast-
ings 18.00-19.00; iron castings, not over 10%
removable Fe, less full deduction for Fe, 16.00-
18.00.

Nickel: Clippings 28.00-34.00; old sheet 26.00-
34.00; turnings 21.00; rods 28.00-34.00.
Nickel: Sheets and clips 57.00-70.00; rolled
rodes 57.00-70.00; turnings 40.00-55.00; rod
bars 57.00-70.00.

Lead: No. 1 pewter 50.00-55.00; block tin pipe
4.00-7.50; No. 1 babbitt 45.00-48.00.

Lead: Old zinc 4.75-5.50; new die cast scrap
7.50-5.00; old die cast scrap 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Luminium: 1100 clippings, 19.00-20.50; 3003
clippings, 19.00-20.50; 6151 clippings, 19.00-
20.50; 5052 clippings, 19.00-20.50; 2014 clip-
pings, 18.00-19.50; 2017 clippings, 18.00-19.50;
224 clippings, 18.00-19.50; mixed clippings,
18.00-19.50; old sheet, 18.00-18.00; old cast,
18.00-18.00; clean old cable (free of steel),
18.00-19.50; borings and turnings, 17.00-18.00.

Mercurium Copper: Heavy scrap, 0.020-in. and
easier, not less than 1.5% Be, 48.00; light
scrap 43.00.

Copper, Brass: No. 1 copper, 33.00; No. 2 copper,
31.50; light copper, 29.75; refinery brass
60% copper) per dry copper content, 29.50.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper, 32.00-33.00; No.
2 copper, 30.50-31.50; light copper, 28.75-29.75;
No. 1 composition borings, 26.50-27.50; No. 1
composition solids, 27.00-28.00; heavy yellow
brass solids, 20.00-21.00; yellow brass turn-
ings, 20.00-20.50; radiators, 20.50-22.00.

PLATING MATERIAL

F.o.b. shipping point, freight allowed on
quantities)

ANODES

Cadmium: Special or patented shapes \$1.70
per lb.

Copper: Flat-rolled 51.42, oval 50.92, 5000-
10,000 lb; electrodeposited 49.40, 2000-5000 lb
lots; cast 50.54, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb \$1.015;
100-499 lb \$99.50; 500-4999 lb \$95.50; 5000-29,999
lb \$83.50; 30,000 lb \$91.50. Carbonized, deduct 3
cents a lb. All prices eastern delivery effective
Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb, \$1.095; 200-
999 lb, \$1.08; 500-999 lb, \$1.075; 1000 lb or
more, \$1.07.

Aluminum: Bar 20.00, bar or flat top 19.00, ton
lots.

CHEMICALS

Cadmium Oxide: \$2.15 per lb, in 100-lb drums.
Chromic Acid: Less than 10,000 lb 28.50; over
10,000 lb 27.50.

Copper Cyanide: 100 lb 76.80; 200 lb 76.05;
500 lb 75.80; 400-900 lb 75.05; 1000 lb and
over 73.05; effective Mar. 24, 1955.

Copper Sulphate: Crystal, 100 lb 21.50; 200 lb
8.50; 300 lb 17.50; 400 lb 17.00; 500-1900 lb
5.50; 2000-10,000 lb 15.25; 10,000 lb and up
5.15. Powder, add 0.5 to above prices. Effective
Mar. 29, 1955.

Nickel Chloride: 100 lb 46.50; 200 lb 44.50;
500 lb 43.50; 400-4900 lb 41.50; 5000-9900 lb
9.50; 10,000 lb and over 38.50. All prices
western delivery, effective Jan. 1, 1955.

Nickel Sulfate: 100 lb 38.25; 200 lb 36.25;
500 lb 35.25; 400-4900 lb 33.25; 5000-35,900
lb 31.25; 36,000 lb 30.25. All prices eastern
delivery, effective Jan. 1, 1955.

Silver Cyanide: (Cents per ounce) 4-oz bottle,
3.125; 16-oz bottle, 81.875; 80-oz bottle,
9.375; 100-oz bottle, 79.375; f.o.b. St. Louis,
New York and Los Angeles. Effective Apr. 6,
1955.

Sodium Cyanide: Egg, under 1000 lb 19.80;
1000-19,900 lb 18.80; 20,000 lb and over 17.80;
granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 70.10; 100-
1000 lb, 55.90; 700-1900 lb, 53.40; 2000-9900 lb,
51.70; 10,000 lb or more, 50.60.

Sodium Chloride (Anhydrous): Less than 50
lb, \$1.558; 50 lb, \$1.218; 100-300 lb, \$1.068;
900-900 lb, \$1.043; 1000-1900 lb, \$1.019; 2000-
900 lb, \$98.20; 5000-19,900 lb, \$92.10; 20,000 lb
or more, \$86.00.

Sodium Sulphate: Less than 50 lb, \$1.258; 50-
90 lb, \$1.258; 100-1900 lb, \$93.80; 2000 lb or more,
\$86.00.

Silver Cyanide: Under 1000 lb 54.30; 1000 lb
and over 52.30.



HOW RUGGED IS YOUR ABRASIVE?



U. S. Patent #2184926 (Other patents pending)

Is it rugged enough to prove itself in performance? You can't judge an abrasive by looks, claims or promises. The only test of any abrasive is its cost per ton of castings cleaned. Because of exclusive metallurgical characteristics, Malleabrasive gives you the lowest cost per ton cleaned of any premium abrasive on the market! This has been proved in hundreds of production tests by users throughout the country. Prove it in your own production test. We GUARANTEE that Malleabrasive will give you lowest cost per ton of castings cleaned.

To order Malleabrasive, or for additional information on running a test, contact Globe Steel Abrasive Co., Mansfield, Ohio.

MALLEABRASIVE

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company. Key on page 125. Key to footnotes, page 127.

SEMI-FINISHED

INGOTS, Carbon, Forging (INT)

Munhall, Pa. U5 \$61.50

INGOTS, Alloy (INT)

Detroit R7 \$65.00

Houston S5 70.00

Midland, Pa. C18 65.00

Munhall, Pa. U5 65.00

BILLETS, BLOOMS & SLABS

Carbon, Rerolling (INT)

Aliquippa, Pa. J5 \$64.00

Bessemer, Pa. U5 64.00

Bridgeport, Conn. N19 69.00

Buffalo R2 64.00

Clairston, Pa. U5 64.00

Ensley, Ala. T2 64.00

Fairfield, Ala. T2 64.00

Fontana, Calif. K1 72.00

Gary, Ind. U5 64.00

Johnstown, Pa. B2 64.00

Lackawanna, N.Y. B2 64.00

LoeStar, Tex. L6 70.00

Munhall, Pa. U5 64.00

Pittsburgh J5 64.00

So. Chicago, Ill. R2, U5 64.00

So. Duquesne, Pa. U5 64.00

Youngstown R2 64.00

Los Angeles B3	5.475
Minnequa, Colo. C10	4.925
Monessen, Pa. P7	4.675
No. Tonawanda, N.Y. B11	4.675
Pittsburg, Calif. C11	5.325
Portsmouth P12	4.675
Reebling, N.J. R5	4.775
So. Chicago, Ill. R2	4.675
SparrowsPoint, Md. B2	4.775
Sterling, Ill. (1) N15	4.675
Sterling, Ill. N15	4.775
Struthers, O. Y1	4.675
Torrance, Calif. C11	5.475
Worcester, Mass. A7	4.975

STRUCTURALS

Carbon Steel Stand. Shapes

Ala. City, Ala. R2	4.25
Aliquippa, Pa. J5	4.25
Bessemer, Ala. T2	4.25
Clairton, Pa. U5	4.25
Fairfield, Ala. T2	4.25
Fontana, Calif. K1	4.90
Gary, Ind. U5	4.25
Geneva, Utah C11	4.25
Houston S5	4.30
Ind. Harbor, Ind. I-2	4.25
Johnstown, Pa. B2	4.25
Lackawanna, N.Y. B2	4.30
LoeStar, Tex. L6	4.55
Mansfield, O. E6	4.225
Minnequa, Colo. C10	5.075
Munhall, Pa. U5	4.25
Newport, Ky. N9	4.225
Pittsburgh J5	4.225
Riverdale, Ill. A1	4.225
So. Chicago, U5, W14	4.25
So. Kansas City, Mo. S5	4.30
So. Minnequa, B3	4.90
Torrance, Calif. C11	4.95
Weirton, W.Va. W6	4.25

Wide Flange

Bethlehem, Pa. B2	4.30
Clairton, Pa. U5	4.25
Fontana, Calif. K1	5.25
Gary, Ind. U5	5.20
Houston S5	5.25
Munhall, Pa. U5	5.20
Phoenixville, Pa. P4	4.30
So. Chicago, Ill. U5	4.25

Alloy Stand. Shapes

Clairton, Pa. U5	5.20
Fontana, Calif. K1	6.60
Gary, Ind. U5	5.20
Houston S5	5.25
Munhall, Pa. U5	5.20
So. Chicago, U5	5.20

H.S., L.A. Stand. Shapes

Aliquippa, Pa. J5	6.40
Bessemer, Ala. T2	6.40
Bethlehem, Pa. B2	6.45
Clairton, Pa. U5	6.40
Fairfield, Ala. T2	6.40
Fontana, Calif. K1	7.05
Gary, Ind. U5	6.40
Geneva, Utah C11	6.40
Houston S5	6.45
Ind. Harbor, Ind. I-2, Y1	6.40
Johnstown, Pa. B2	6.45
Lackawanna, N.Y. B2	6.60
Los Angeles B3	10.60
Munhall, Pa. U5	6.40
Midland, Pa. C18	6.80
Munhall, Pa. U5	6.30
So. Chicago R2, U5, W14	36.00
So. Duquesne, Pa. U5	6.60
Struthers, O. Y1	6.60
Warren, O. C17	6.60

ROUNDS, SEAMLESS TUBE (INT)

Buffalo R2 \$96.50

Canton, O. R2 96.50

Cleveland R2 96.50

Gary, Ind. U5 96.50

So. Chicago R2, W14 96.50

So. Duquesne, Pa. U5 96.50

SKELP

Aliquippa, Pa. J5 4.00

Fontana, Calif. K1 4.775

LoneStar, Tex. L6 4.30

Munhall, Pa. U5 3.90

SparrowsPoint, Md. B2 3.90

Warren, O. R2 3.90

Youngstown R2, U5 3.90

WIRE RODS

AlabamaCity, Ala. R2 4.675

Aliquippa, Pa. J5 4.675

Alton, Ill. L1 4.85

Buffalo B11, W12 4.675

Cleveland A7 4.675

Donora, Pa. A7 4.675

Fairfield, Ala. T2 4.675

Fontana, Calif. K1 5.475

Houston S5 4.925

IndianaHarbor, Ind. Y1 4.675

Johnstown, Pa. B2 4.675

Joliet, Ill. A7 4.675

Lackawanna, N.Y. B2 5.075

KansasCity, Mo. S5 4.925

Kokomo, Ind. C16 4.775

PILING

BEARING PILES

Munhall, Pa. U5	4.25
So. Chicago, Ill. U5	4.25

STEEL SHEET PILING

Ind. Harbor, Ind. I-2	5.075
Lackawanna, N.Y. B2	5.075

PLATES

PLATES, Carbon Steel

Ala. City, Ala. R2	4.225
Alquippa, Pa. J5	4.225
Ashland, Ky. (15) A10	4.225
Bessemer, Ala. T2	4.225
Bridgeport, Conn. N19	4.475
Buffalo R2	4.225
Clairston, Pa. U5	4.225
Claymont, Del. C22	4.225
Cleveland J5, R2	4.225
Coatesville, Pa. L7	4.225
Conshohocken, Pa. A3	4.225
Emeryville, Calif. J7	4.225
Fairfield, Ala. T2	4.225
Fontana, Calif. (30) K1	4.875
Gary, Ind. U5	4.225
Geneva, Utah C11	4.225
Harrisburg, Pa. C5	4.225
Huntington, W. Va. B2	4.225
Ind. Harbor, Ind. I-2, Y1	4.225
Johnstown, Pa. B2	4.225
Lackawanna, N.Y. B2	4.225
Minnequa, Colo. C10	4.075
Munhall, Pa. U5	4.225
Newport, Ky. N9	4.225
Ohio River, Md. B2	4.225
Portland, Oreg. O4	4.00
Seattle, Wash. W10	4.225
St. Louis, Mo. S5	4.225
Youngstown R2, U5, Y1	4.225

PLATES, Ingot Iron

Ashland c.l. (15) A10	4.475
Alaska l.c.l. (15) A10	4.975
Cleveland c.l. R2	4.825
Emeryville, Calif. J7	4.55
Fairfield, Ala. T2	4.30
Fontana, Calif. K1	5.00
Gary, Ind. R2	4.825
Niles, Calif. P1	5.00
Pittsburgh J5	4.20
Portland, Oreg. O4	4.50
St. Louis, Mo. S5	4.20
Youngstown U5	4.20

BARS

BAR, Hot-Rolled Carbon

Ala. City, Ala. R2	4.30
Alquippa, Pa. J5	4.30
Alton, Ill. L1	4.50
Atlanta A11	4.50
Birmingham C15	4.30
Buffalo R2	4.30
Cleveland R2	4.30
Emeryville, Calif. J7	4.55
Fairfield, Ala. T2	4.30
Fontana, Calif. K1	5.00
Gary, Ind. U5	4.30
Ind. Harbor, Ind. I-2	4.30
Johnstown, Pa. B2	4.30
Kansas City, Mo. S5	4.30
Lake Charles, La. R2	4.30
Minneapolis, Minn. B2	4.30
Montgomery, Ala. R2	4.30
Newark, N.J. W18	4.30
Youngstown F3	4.30

BARS

BAR SHAPES, Hot-Rolled Alloy

Clairston, Pa. U5	5.20
Gary, Ind. U5	5.20
Houston S5	5.45
Kansas City, Mo. S5	5.45
Youngstown U5	5.45

BARS

BARS, Cold-Finished Carbon

Ambridge, Pa. W18	5.40
BeaverFalls, Pa. M12, R2	5.40
Buffalo B5	5.45
Camden, N.J. P13	5.85
Carnegie, Pa. C12	5.85
Chicago W18	5.40
Claymont, Del. C22	5.40
Emeryville, Calif. J7	5.40
Fairfield, Ala. T2	5.40
Franklin Park, Ill. N5	5.40
Gary, Ind. R2	5.40
Green Bay, Wis. F7	5.40
Hartford, Conn. R2	5.40
New Castle, Pa. (17) B4	5.40
Pittsburgh J5	5.40
Portland, Oreg. O4	5.45
Youngstown F3	5.40

BARS

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland, Md. (5) C19	4.65
Ambridge, Pa. W18	5.625
BeaverFalls, Pa. M12, R2	5.625
Buffalo B5	5.625
Camden, N.J. P13	5.85
Carnegie, Pa. C12	5.85
Chicago W18	5.625
Cleveland A7, C20	5.625
Emeryville, Calif. J7	5.625
Fairfield, Ala. T2	5.625
Green Bay, Wis. F7	5.625

d. Harbor, Ind. I-2, Y1 4.30	SHEETS	Gary, Ind. U5 6.10	Weirton, W. Va. W6 7.50	SHEETS, Galvanized High-Strength Low-Alloy
hnstown, Pa. B2 4.30	SHEETS, Hot-Rolled Steel (18 Gage and Heavier)	Ind. Harbor, Ind. I-2, Y1 6.10	Youngstown Y1 7.50	Draovsburg, Pa. U5 8.20
jet, Ill. P22 4.30	Ala. City, Ala. R2 4.05	Lackawanna(35) B2 6.10	Munhall, Pa. U5 6.10	SparrowsPoint(30) B2 8.20
insasCity, Mo. S5 4.55	Allentown, Pa. P7 4.05	Pittsburgh J5 6.10	Cleveland R2 5.55	SHEETS, Galvannealed Steel
ckawanna, N.Y. B2 4.30	Ashland, Ky. (8) A10 4.05	Sharon, Pa. S3 6.10	Middletown, O. A10 5.45	Canton, O. R2 5.85
sAngeles, B3 5.00	Cleveland J5, R2 4.05	So. Chicago, Ill. U5 6.10	Warren, O. R2 5.55	Draovsburg, Pa. U5 5.85
les, Calif. P1 5.00	Conshohocken, Pa. A3 4.10	SparrowsPoint(36) B2 6.10	Kokomo, Ind. C16 8.20	
ttsburg, Calif. C11 5.00	Detroit(8) M1 4.15	Warren, O. R2 6.10	Newport, Ky. N9 5.85	
ttsburgh J5 4.30	Draovsburg, Pa. U5 4.05	Youngstown U5, Y1 6.10	Niles, O. N12 5.85	
rtland, Oreg. O4 5.05	Ecorse, Mich. G5 4.15	SHEETS, Culvert Cu Cu (16 Gage) Alloy Fe	SHEETS, Galvanized Ingot Iron	
ndSprings, Okla. S5 4.80	Fairfield, Ala. T2 4.05	Ashland, Ky. A10 6.50	Ashland, Ky. (8) A10 5.70	
attle B3, N14, P23 5.05	FairlessHills, Pa. U5 4.10	Canton, O. R2 6.50	Canton, O. R2 6.20	
Chicago, R2 4.30	Fontana, Calif. K1 4.825	Draovsburg U5 5.70	SHEETS, Galvanized Ingot Iron	
Duquesne, Pa. U5 4.30	Gary, Ind. U5 4.05	Fairfield T2 5.70	Ashland, Ky. A10 5.70	
anFrancisco B3 5.05	Geneva, Utah C11 4.15	Ind. Harbor, Ind. I-2 4.30	Canton, O. R2 5.70	
arrowsPoint, Md. B2 4.30	GraniteCity, Ill. G4 4.25	Warren, O. R2 4.65	Butler, Pa. A10 5.70	
erling, Ill. (1) N15 4.30	Ind. Harbor, Ind. I-2, Y1 4.05	Kokomo, Ind. C16 5.80	Middletown, O. A10 5.70	
erling, Ill. N15 4.40	Kokomo, Ind. C16 4.15	MartinsFerry, W10 5.70	SHEETS, Galvanized Ingot Iron	
ruthers, O. Y1 4.30	Lackawanna, N.Y. B2 4.05	Newport, Ky. N9 5.70	(Hot-dipped Continuous)	
rrance, Calif. C11 5.00	Mansfield, O. E6 (37) 4.05	Pitts., Calif. C11 6.45	Ashland, Ky. A10 5.70	
ngstown, R2, U5 4.30	Mansfield, O. E6 (38) 4.80	SparrowsPt. B2 5.70	Butler, Pa. A10 5.70	
ARS, Reinforcing (Fabricated; to Consumers)	Munhall, Pa. U5 4.05	SHEETS, Culvert—Pure Iron	Middletown, O. A10 5.70	
ohnstown, Pa. 1/4"-1" B2, Y1 5.70	Conshohocken, Pa. A3 5.00	Ashland, Ky. A10 6.75	SHEETS, Electrogalvanized	
ansasCity, Kans. S5 6.50	Pittsburgh, Calif. C11 4.75	Gary, Ind. U5 5.95	Cleveland(28) R2 6.30	
os Angeles B3 5.95	Pittsburgh J5 4.05	MartinsFerry, O. W10 5.95	Niles, O. (28) R2 6.30	
larion, O. P11 5.55	Portsmouth, O. P12 4.05	SHEETS, Galvanized Steel Hot-Dipped	Weirton, W. Va. W6 6.18	
ttsburgh J5, U8 5.72	Riverdale, Ill. A1 4.05	Ala. City, Ala. R2 5.45‡	SHEETS, Enameling Iron	
o. San Francisco B3 6.15	Sharon, Pa. S3 4.05	Ashland, Ky. A10 5.45*	Ashland, Ky. (8) A10 5.375	
parrowsPt. 1/4"-1" B2 5.70	So. Chicago, Ill. W14 4.05	Bettler, Pa. A10 5.45†	Cleveland R2 5.375	
illiamsport, Pa. S19 5.60	SparrowsPoint, Md. B2 4.05	Canton, O. R2 5.45‡	Draovsburg, Pa. U5 5.375	
Y1 4.30	Steubenville, O. W10 4.05	Delphos, O. N16 6.10‡	Gary, Ind. U5 5.375	
AIL STEEL BARS	Warren, O. R2 4.05	Dover, O. R1 5.45‡	GraniteCity, Ill. G4 5.575	
lis, Pa. (3) J8 4.25	Youngstown, U5, Y1 4.05	Pittsburgh, Calif. C11 5.90	Ind. Harbor, Ind. I-2 5.375	
icagoHts. (3) C2, I-2, 4.20	SHEETS, H.R. (19 Ga. & Lighter)	Pittsburgh J5 4.95	Middletown, O. A10 5.375	
icagoHts. (4) C2, I-2, 4.30	Ala. City, Ala. R2 5.35	Portsmouth, O. P12 4.95	Niles, O. N12 5.375	
t. Worth, Tex. (26) T4 4.75	Kokomo, Ind. C16 5.20	Warren, O. R2 4.95	Youngstown Y1 5.375	
ranklin, Pa. (3) F5 4.20	Niles, O. N12 4.95	Youngstown Y1 4.95	BLUED STOCK, 29 Gage	
ranklin, Pa. (4) F5 4.30	SHEETS, H.R. Alloy	SHEETS, Cold-Rolled High-Strength Low-Alloy	Follansbee, W. Va. F4 7.375	
arion, O. (3) P11 4.20	Ind. Harbor, Ind. Y1 5.80	Cleveland J5, R2 7.50	Follansbee(23) F4 6.60	
Ioline, Ill. (3) R2 4.30	Youngstown Y1 5.80	Draovsburg, Pa. U5 7.50	Yorkville, O. W10 7.375	
onawanda(3) B12 4.15	SHEETS, H.R. (14 Ga. & Heavier)	Ecorse, Mich. G5 7.60	SHEETS, Long Terne Steel (Commercial Quality)	
onawanda(4) B12 4.30	High-Strength Low-Alloy	Fairdale, Ill. G4 8.55	BeechBottom, W. Va. W10 5.85	
illiamsport, Pa. (3) S19 4.30	Cleveland J5, R2 6.10	FairlessHills, Pa. U5 7.55	Gary, Ind. U5 5.85	
ARS, Wrought Iron	Conshohocken, Pa. A3 6.15	Fontana, Calif. K1 8.55	Mansfield, O. E6 5.85	
conomy, Pa. (S.R.) B14 10.85	Dravensburg, Pa. U5 6.10	Gary, Ind. U5 7.50	Middletown, O. A10 5.85	
conomy, Pa. (D.R.) B14 13.50	Ecorse, Mich. G5 6.20	IndianaHarbor, Ind. Y1 7.50	Niles, O. N12 5.85	
McK.Rks. (S.R.) L5 10.85	Fairfield, Ala. T2 6.10	Lackawanna(37) B2 7.50	Weirton, W. Va. W6 5.85	
McK.Rks. (D.R.) L5 14.75	FairlessHills, Pa. U5 6.15	SparrowsPoint(38) B2 7.50	SHEETS, Well Casing	
McK.Rks. (Staybolt) L5 16.25	Fontana, Calif. K1 6.875	SHEETS, Long Terne, Ingot Iron	Fontana, Calif. K1 6.325	
Y1 4.30	SHEETS, H.R. Alloy	Pittsburgh J5 7.50	Middletown, O. A10 6.25	
Key to Producers	High-Strength Low-Alloy	Fairfield, Ala. T2 5.45†		
A1 Acme Steel Co.	C19 Cumberland Steel Co.	J1 Jackson Iron & Steel Co.	O1 Oliver Iron & Steel Corp.	
A3 Alan Wood Steel Co.	C20 Cuyahoga Steel & Wire	J2 Jessop Steel Co.	O2 Oregon Steel Mills	
A4 Allegheny Ludlum Steel	C22 Claymont Steel Products	J3 Johnson Steel & Wire Co.	P1 Pacific States Steel Corp.	
A5 Alloy Metal Wire Co.	Dept. Wickwire Spencer	J4 Jones & Laughlin Steel	P2 Pacific Tube Co.	
A6 American Shim Steel Co.	Steel Division	J5 Joslyn Mfg. & Supply	P4 Phoenix Iron & Steel Co.	
A7 American Steel & Wire	C23 Charter Wire Inc.	J6 Judson Steel Corp.	P5 Pilgrim Drawn Steel	
A8 Anchor Drawn Steel Co.	C24 G. O. Carlson Inc.	J7 Jersey Shore Steel Co.	P6 Pittsburgh Coke & Chem.	
A9 Angell Nail & Chaplet	C31 Chester Blast Furnace	K1 Kaiser Steel Corp.	P7 Pittsburgh Steel Co.	
A10 Armclo Steel Corp.	Inc.	K2 Keokuk Electro-Metals	P11 Pollak Steel Co.	
All Atlantic Steel Co.	D2 Detroit Steel Corp.	K3 Keystone Drawn Steel	P12 Portsmouth Division	
B1 Babcock & Wilcox Co.	D3 Detroit Tube & Steel	K4 Keystone Steel & Wire	Detroit Steel Corp.	
B2 Bethlehem Steel Co.	D4 Dissont & Sons, Henry	K5 Kenmore Metals Corp.	P13 Precision Drawn Steel	
B3 Beth. Pac. Coast Steel	D6 Driver Harris Co.	L1 Laclede Steel Co.	P14 Pitts. Screw & Bolt Co.	
B4 Blair Strip Steel Co.	D7 Dickson Weatherproof	L2 LaSalle Steel Co.	P15 Pittsburgh Metallurgical	
B5 Bliss & Laughlin Inc.	D8 Damascus Tube Co.	L3 Latrobe Steel Co.	P16 Page Steel & Wire Div., Amer. Chain & Cable	
B6 Braeburn Alloy Steel	D9 Wilbur B. Driver Co.	L4 Lockhart Iron & Steel	P17 Plymouth Steel Co.	
B7 Brainard Steel Div.,	E1 Eastern Gas & Fuel Assoc.	L5 Lone Star Steel Co.	P19 Pitts. Rolling Mills	
Sharon Steel Corp.	E2 Eastern Stainless Steel	L6 Lukens Steel Co.	P20 Prod. Steel Strip Corp.	
B10 E. & G. Brooke, Wick-	E3 Electro Metallurgical Co.	M1 McLouth Steel Corp.	P22 Phoenix Mfg. Co.	
wire Spencer Steel Div.	E4 Elliott Bros. Steel Co.	M4 Mahoning Valley Steel	P23 Pacific Steel Rolling	
Colo. Fuel & Iron	E5 Empire Steel Corp.	M6 Mercer Pipe Div., Saw-	R1 Reeves Steel & Mfg. Co.	
B11 Buffalo Bolt Co., Div.,	E6 Firth Sterling Inc.	M7 Mid-States Steel & Wire	R2 Republic Steel Corp.	
Buffalo-Eclipse Corp.	F3 Fitzsimons Steel Co.	M8 Monarch Steel Div.,	R3 Rhode Island Steel Corp.	
B12 Buffalo Steel Corp.	F4 Follansbee Steel Corp.	M9 Franklyn Steel Div.,	R4 Roebling's Sons, John A.	
B14 A. M. Byers Co.	F5 Fretz-Moon Tube Co.	M10 Jones & Laughlin Steel	R5 Rome Strip Steel Co.	
B15 J. Bishop & Co.	F6 Ft. Howard Steel & Wire	M11 Karpowich Steel Corp.	R6 Rome Strip Steel Co.	
C11 Castrip Steel Corp.	F7 Ft. Wayne Metals Inc.	M12 Laclede Steel Co.	R7 Rotary Electric Steel Co.	
C12 Calumet Steel Div.,	G2 Globe Iron Co.	M13 Merritt-Chapman & Scott	R8 RelianceDiv., EatonMfg.	
Borg-Warner Corp.	G4 Granite City Steel Co.	M14 McInnes Steel Co.	R9 Rome Mfg. Co.	
C14 Carpenter Steel Co.	G5 Great Lakes Steel Corp.	M16 Md. Fine & Special. Wire	R10 Rodney Metals Inc.	
Central Iron & Steel Div.	G6 Greer Steel Co.	M17 Metal Forming Corp.	S1 Seneca Wire & Mfg. Co.	
Barium Steel Corp.	H1 Hanna Furnace Corp.	M18 Milton Steel Prod. Div.,	S2 Sharon Steel Corp.	
C16 Cleve. Cold Rolling Mills	H2 Helical Tube Co.	M19 Merritt-Chapman & Scott	S3 Sharon Tube Co.	
Cold Metal Products Co.	H3 Inland Steel Co.	N1 National-Standard Co.	S4 Sheffield Steel Div.,	
C17 Colonial Steel Co.	H4 Interlake Iron Corp.	N2 National Supply Co.	Armclo Steel Corp.	
Colorado Fuel & Iron	H5 Ingersoll Steel Div.,	N3 National Tube Div.	S5 Shenango Furnace Co.	
C18 Columbia-Geneva Steel	H6 Igoe Bros. Inc.	N4 Nelsen Steel & Wire Co.	S6 Simmons Co.	
C19 Columbia Steel & Shaft	H7 Inland Steel Co.	N5 NewEng. High Carb. Wire	S7 Simonds Saw & Steel Co.	
C20 Columbia Tool Steel Co.	H8 Ingersoll Steel Div.,	N6 NewMan-Crosby Steel	S8 Spencer Wire Corp.	
C21 Compressed Steel Shaft.	H9 Interlake Iron Corp.	N7 Newport Steel Corp.	S9 Standard Forgings Corp.	
C22 Connors Steel Div.,	I-1 Ingoe Bros. Inc.	N8 Niles Rolling Mill Div.	S10 Stanley Works	
H. K. Porter Co. Inc.	I-2 Inland Steel Co.	N9 NorthWest SteelRoll Mills	S11 Superior Drawn Steel Co.	
Continental Steel Corp.	I-3 Interlake Iron Corp.	N10 Northwest SteelRoll Mills	S12 Superior Drawn Steel Co.	
Copperweld Steel Co.	I-4 Ingersoll Steel Div.,	N11 Niles Rolling Mill Div.	S13 Standard Tube Co.	
C23 Crucible Steel Co.	Borg-Warner Corp.	N12 Niles Rolling Mill Div.	S14 Standard Tube Co.	
		N13 Niles Rolling Mill Div.	S15 Stanley Works	
		N14 Niles Rolling Mill Div.	S16 Standard Tube Co.	
		N15 Niles Rolling Mill Div.	S17 Superior Drawn Steel Co.	
		N16 Niles Rolling Mill Div.	S18 Superior Steel Corp.	

WIRE

(Continued)

IRE, Tire Bead

Ition, Ill., L1	13.25
artownville, Ill., K4	13.25
tonessen, Pa., P16	13.15
ortsouth, O., P12	13.15
oebling, N.J., R5	13.45

IRE, Cold-Rolled Flat

nderson, Ind., G6	7.95
altimore T6	8.25
uffalo W12	7.95
leveland A7	7.95
rawfordsville, Ind., M8	8.05
over, O., G6	7.95
ostoria, O., S1	7.95
ranklin Park, Ill., T6	8.05
okomo, Ind., C16	8.05
tassilon, O., R8	7.95
ionessen, Pa., P7, P16	7.95
awtucket, R.I., N8	8.25
ome, N.Y. (32) R6	7.95
renton, N.J., R5	8.25
Vorcester A7, T6, W12	8.25

IRE, Merchant Quality

(6 to 8 gage) An'd Galv.	
ala, City, Ala., R2	6.90 7.30**
albuquerque, N.M.	6.90 7.425*
lanta A11	7.00 7.55
Bartonville (48) K4	7.00 7.575
uffalo W12	6.90 7.30†
leveland A7	6.90 7.40†
rawfordsville, M8	7.00 7.55†
o. Chicago R2	6.90 7.30†
onora, Pa., A7	6.90 7.30†
Duluth, Minn., A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Houston, Tex., S5	7.15 7.55†
o. Worcester A7	7.45 7.95

acks'ville, Fla., M8	7.425 7.95
ohnstown B2 (48)	6.90 7.45*
olley, Ill., A7	6.90 7.30†
KansasCity, Mo., S5	7.15 7.55†
Kokomo C16	7.00 7.40†
Los Angeles B3	7.85
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45

*Based on 11c zinc; +5c zinc; †Less than 10c zinc;
**Subject to zinc equalization extras.

WOVEN Fence, 9-15½ Ga. Col.	
ala, City, Ala., R2	146**
ala, City, 17 ga. R2	241**
ala, City, 18 ga. R2	251*
Aliquippa, Pa., 9-14½ Ga. J5	149\$
Atlanta A11	151
Bartonville, Ill., K4	152
Crawfordsville, Ind., M8	151
Donora, Pa., A7	146†
Duluth, Minn., A7	146†
Fairfield, Ala., T2	146†
Houston, Tex., S5	151†
Johnstown, Pa. (43) B2	149
Jolley, Ill., A7	146†
KansasCity, Mo., S5	151†
Kokomo, Ind., C16	148†
Minnequa, Colo., C10	151**
Monessen, Pa., 9 ga. P17	149
Pittsburg, Calif., C11	159
Rankin, Pa., A7	146†
o. Chicago, Ill., R2	146*
Sterling, Ill. (1) N15	150

*Based on 11c zinc; +5c zinc; †Less than 10c zinc;
**Subject to zinc equalization extras.

STAPLES, Polished Stock To Dealers & Mfrs. (7) Col.	
Aliquippa, Pa., J5	138
Atlanta A11	140
Johnstown, Pa. (43) B2	149
Jolley, Ill., A7	146†
KansasCity, Mo., S5	151†
Kokomo, Ind., C16	148†
Minnequa, Colo., C10	151**
Monessen, Pa., 9 ga. P17	149
Pittsburg, Calif., C11	159
Rankin, Pa., A7	146†
o. Chicago, Ill., R2	146*
Sterling, Ill. (1) N15	150

*Based on 5c zinc; +11c zinc; +10c zinc; **Subject to zinc equalization extras.	
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SALE TIES, Single Loop Col.	
AlabamaCity, Ala., R2	155
Bartontville, Ill., K4	157
Crawfordsville, Ind., M8	157
Donora, Pa., A7	155
Duluth, Minn., A7	155
Fairfield, Ala., T2	155
Houston S5	160
KansasCity, Mo., S5	160
Kokomo, Ind., C16	157
Minnequa, Colo., C10	160
Pittsburg, Calif., C11	179
o. Chicago, Ill., R2	155
o. San Fran., Calif., C10	179
SparrowsPt, Md., B2	157
Sterling, Ill. (1) N15	155

WIRE, Barbed Col.	
AlabamaCity, Ala., R2	159**
Aliquippa, J5	156\$

Atlanta A11	164
Bartonville, Ill., K4	165
Crawfordsville, Ind., M8	164
Donora, Pa., A7	159†
Duluth, Minn., A7	159†
Fairfield, Ala., T2	159†
Houston, Tex., S5	164†
Johnstown, Pa., K2	162
Jolley, Ill., A7	159†
KansasCity, Mo., S5	164†
Kokomo, Ind., C16	161†
Minnequa, Colo., C10	164**
Monessen, Pa., P7	162
Pittsburg, Calif., C11	179†
Rankin, Pa., A7	159†
SparrowsPt, Md., B2	164*
Sterling, Ill. (1) N15	163

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)	
4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
½-in. & smaller diam	+3
6 in. and shorter:	
½-in. and ¾-in. +4	
¾-in. and larger +6	
Longer than 6 in.:	
All diameters +15	
Lag bolts, all diams:	
6 in. and shorter 6	
Over 6 in. long +2	
Ribbed Necked Carriage	+4
Blank 10	
Plow 23	
Step, Elevator, Tap and	
Sleigh Shoe 10	
Tire Bolts +3	
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:

Square, all sizes 55	
H.P., Hex, regular & heavy:	
½-in. and smaller 55	
¾-in. to 1½-in., inclusive 58	
1¼-in. to 1½-in., inclusive 60	
1½-in. and larger 55	
C.P. Hex regular & heavy:	
All sizes 55	
Hot Galv. Nuts (all types):	
½-in. or smaller 38	
¾-in. to 1½-in., inclusive 41	
Finished Hex Nuts:	
New standard, all sizes 55	
Semifinished & Slotted Hex:	
Regular and heavy, all sizes 55	

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)	
1 in. diam x 6 in. and shorter 34	
1 in. and smaller diam x over 6 in. 20	

HEADLESS SET SCREWS

(Packaged; per cent off list)	
No. 10 and smaller 34	
¼ in. diam & larger 14	
N.F. thread, all diams.... 8	

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)	
Plain finish 43	
Plated finishes 23	

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)	
6 in. or shorter:	
½-in. through ¾-in. 38	
¾-in. through 1 in.... 15	
Longer than 6 in.:	
½-in. through ¾-in. 20	
¾-in. through 1 in.... 7	

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburg, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.	
Structural ½-in., larger 9.25 ½-in. under. List less 37%	
Duluth, Minn., A7	138
Fairfield, Ala., T2	138
Johnstown, Pa., B2	138
Jolley, Ill., A7	138
KansasCity, Mo., S5	151†
Kokomo, Ind., C16	148†
Minnequa, Colo., C10	151**
Monessen, Pa., 9 ga. P17	149
Pittsburg, Calif., C11	159
Rankin, Pa., A7	146†
SparrowsPt, Md., B2	140
Sterling, Ill. (1) N15	138
Worcester, Mass., A7	144

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers	
List	

Footnotes

- (1) Chicago base.
- (2) Angles, flats, bands.
- (3) Merchant.
- (4) Reinforcing.
- (5) 1½" to 1 7/16"; 1 7/16" to 1 15/16" 4.78c; 1 15/16" to 7 5/16" 5.15c.
- (6) Chicago or Birm. base.
- (7) To jobbers, 3 cols. lower.
- (8) 16 Ga. and heavier.
- (9) 6 in. and narrower.
- (10) Pittsburgh base.
- (11) Cleveland & Pitts. base.
- (12) Worcester, Mass. base.
- (13) Add 0.25c for 17 Ga. & heavier.
- (14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
- (15) ¾" and thinner.
- (16) 40 lb and under.
- (17) Flats only; 0.25 in. & heavier.
- (18) To dealers.
- (19) Chicago & Pitts. base.
- (20) 0.25 off for untreated.
- (21) New Haven, Conn., base.
- (22) Del. San Francisco Bay area.
- (23) 20 Ga. 36" wide.
- (24) Deduct 0.10c, finer than 15 Ga.
- (25) Bar mill bands.
- (26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
- (27) Bar mill sizes.
- (28) Barred.
- (29) Youngstown base.
- (30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.35c. H.S.-L.A.
- (31) Widths over 5½-in. & 6.40c for widths 5½-in. and under by 0.125 in. and thinner.
- (32) Buffalo base.
- (33) To jobbers, deduct 20c.
- (34) 9.60c for cut lengths.
- (35) 72" and narrower.
- (36) 54" and narrower.
- (37) 13 Ga. & heavier; 80" & narrower.
- (38) 14 Ga. & lighter; 48" & narrower.
- (39) 48" and narrower.
- (40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
- (41) 13 Ga. & heavier; 80" & narrower.
- (42) Mill lengths, f.o.b. mill; del'd. to mill zone or within switching limits, 5.10c.
- (43) 9-14½ Ga.
- (44) 6-7 Ga.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D.	B.W.	Gage	H.R.	C.D.	H.R.	Seamless	Elec. Weld
1	13	...	19.59	19.00	18.77		
1½	13	...	21.40	25.65	20.75		
2	13	...	23.33	33.97	27.48		
2½	13	...	31.91	38.26	30.95		
2½	12	...	34.63	41.52	33.59		
2½	12	...	38.15	45.74	37.00		
3	12	...	41.31	49.53	40.07		
3	12	...	44.05	52.82	42.72		

RAILWAY MATERIALS

		Standard	Tee Rails
RAILS			
Bessemer, Pa.	U5	4.45	4.40
Ensley, Pa.	T2	4.45	4.35
Fairfield, Ala.	T2	4.45	4.35
Gary, Ind.	U5	4.25	4.25
Indiana Harbor, Ind.	I-2	5.275	5.275
Lackawanna, N.Y.	B2	5.275	

SEAMLESS STANDARD PIPE, Threaded and Coupled								Carload discounts from list, %								
Size—Inches	2	2½	3	3½	4	5	6	Size—Inches	2	2½	3	3½	4	5	6	
List Per Ft.	37c	58.5c	76.5c	92c	\$1.09	\$1.48	\$1.92	Pounds Per Ft.	3.68	5.82	7.62	9.20	10.89	14.81	19.18	
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	
Alquippa, Pa. J5	13.5 + 3	17.5 + 0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5	23.25	5.5	23.25	5.5
Ambridge, Pa. N2	13.5	17.5	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5	23.25	5.5	23.25	5.5
Lorain, O. N3	13.5 + 3	17.5 + 0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5	23.25	5.5	23.25	5.5
Youngstown Y1	13.5 + 3	17.5 + 0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5	23.25	5.5	23.25	5.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled								Carload discounts from list, %								
Youngstown R2	13.5 + 3	17.5 + 0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5	23.25	5.5	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled								Carload discounts from list, %								
Size—Inches	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1/8	1/4	3/8	1/2	5/8	3/4	1	1 1/4
List Per Ft.	5.5c	6c	8.5c	11.5c	11.5c	17c	23c									
Pounds Per Ft.	0.24	0.42	0.57	0.85	1.13	1.68	2.28									
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	
Alquippa, Pa. J5	...	...	...	23.75	6.5	28.75	10.5	29.25	14	31.75	15.25				
Alton, Ill. L1	...	...	...	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25				
Benwood, W. Va. W10	24	+ 4.5	15.25 + 10.25	7.25 + 17.25	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				
Butler, Pa. F6	25	+ 3.5	17 + 8.5	9.5 + 15	
Etna, Pa. N2	...	...	...	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25				
Fairless Hills, Pa. N3	...	...	...	10.75 + 6.5	13.75 + 2.5	16.25	1	18.75	2.25						
Fontana, Calif. K1	...	...	...	22.75	5.5	25.75	9.5	28.25	13	30.75	14.25				
Ind. Harbor, Ind. Y1	...	...	...	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				
Lorain, O. N3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sharon, Pa. S4	25	+ 3.5	17 + 8.5	9.5 + 15	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				
Sharon, Pa. M6	...	...	...	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				
Sparrows Pt., Md. B2	23	+ 5.5	15 + 10.5	7.5 + 17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25				
Youngstown R2, Y1	...	...	...	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				
Wheatland, Pa. W9	23	+ 5.5	15 + 10.5	7.5 + 17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25				

Size—Inches	1 1/2	2	2 1/2	3	3 1/2	4	5	6	Size—Inches	1 1/2	2	2 1/2	3	3 1/2	4	5
List Per Ft.	27.5c	37c	58.5c	76.5c	92c	10.89	\$1.09									
Pounds Per Ft.	2.73	3.68	5.82	7.62	9.20	10.89										
Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	Blk Galv*	
Alquippa, Pa. J5	32.25	16.25	32.75	16.75	34.25	17	...	...	...	...	...	...	...	...	...	...
Alton, Ill. L1	30.25	14.25	30.75	14.75	32.25	15	32.25	15	...	...	...	...	...	...	...	...
Benwood, W. Va. W10	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75	...	...	...	...
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75	...	...	...	...
Fairless Hills, Pa. N3	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75	...	...	...	...
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+ 5.25	12.5	+ 5.25	...	...	...	...
Ind. Harbor, Ind. Y1	31.25	16.25	31.75	16.75	33.25	18	33.25	18	24.5	6.75	24.5	6.75	6.75	6.75	6.75	6.75
Lorain, O. N3	32.25	16.25	32.75	16.75	34.25	17	34.25	17	...	...	...	...	...	...	...	...
Sharon, Pa. M6	32.25	16.25	32.75	16.75	34.25	17	34.25	17	...	...	...	...	...	...	...	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75	5.75	5.75	5.75	5.75
Youngstown R2, Y1	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75	7.75	7.75	7.75	7.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75	7.75	7.75	7.75	7.75

*Galvanized pipe discounts based on current price of zinc (12.00c; East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F.				C.R. Strip; Flat Wire	Plates Carbon Base		Sheets Carbon Base
					H.R. Strip	Bars; Wire	Plates	Sheets		10%	20%	
301	16.75	21.00	30.00	34.75	30.25	35.75	37.75	41.75	38.75	...	...	28.00
302	17.75	23.25	30.25	35.00	32.50	36.00	38.00	42.00	42.00	30.30	35.50	29.75
302B	19.00	25.00	31.00	35.00	35.50	36.00	38.00	45.25	45.25	34.40	38.80	32.75
303	25.25	32.75	37.75	...	38.75	40.25	46.00	46.00	32.25	37.80	43.30	42.75
304	19.00	24.50	31.75	36.75	35.00	38.00	40.50	44.50	44.50	34.20	38.60	34.25
304L	...	36.75	41.75	40.00	43.00	45.50	49.50	49.50	49.50	40.50	44.20	40.50
305	20.50	26.50	33.50	37.25	38.00	38.00	41.00	47.50	47.50	32.10	33.40	30.60
308	20.75	27.25	36.25	41.75	39.00	43.00	47.00	49.00	49.00	32.40	33.40	30.60
309	27.75	36.00	44.00	50.50	50.50	51.75	55.00	63.25	63.25	43.00	47.90	33.40
309S	29.75	38.75	48.00	55.75	55.25	56.75	60.25	69.75	69.75	40.80	45.10	34.25
310	35.00	45.25	58.75	68.25	64.75	69.50	71.00	74.25	74.25	41.70	45.80	35.50
314	...	...	...	...	...	...	71.00	...	...	...	...	...
318	29.75	38.00	48.25	56.25	55.00	57.25	60.50	64.50	64.50	40.60	46.00	33.00
316L	...	53.25	61.25	60.00	62.25	65.50	69.50	69.50	69.50	40.60	46.00	33.00
317	35.00	45.50	59.25	68.75	69.50	70.25	72.75	79.00	79.00	40.80	46.00	33.00
321	23.50	30.25	36.00	41.50	41.75	42.75	46.50	51.25	51.25	32.25	37.50	32.25
330	...	61.50	...	...	72.00	73.25	81.25	81.25	81.25	41.70	47.90	33.00
18-8CbTa	29.25	38.25	46.00	52.25	53.00	53.75	58.50	66.50	66.50	40.60	46.00	33.00
403	...	27.00	30.75	32.00	34.25	34.25	37.75	40.25	40.25	32.25	37.50	32.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75	32.25	37.50	32.25
410	14.00	18.25	24.00	27.25	26.25	28.75	30.00	34.25	34.25	32.25	37.50	32.25
414	...	24.50	...	...	29.25	30.50	35.25	35.25	35.25	32.25	37.50	32.25
416	...	24.50	28.25	...	29.25	...	...	...	...	32.25	37.50	32.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75	32.25	37.50	32.25
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75	32.25	37.50	32.25
430F	...	25.00	28.75	...	29.75	...	...	...	...	32.25	37.50	32.25
431	15.00	19.25	25.00	28.75	28.00	29.75	31.00	35.75	35.75	32.25	37.50	32.25</

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

Birmingham District		No. 2 Basic	Malleable Foundry	Bessemer	Youngstown District		No. 2 Basic	Malleable Foundry	Bessemer	
AlabamaCity, Ala.	R2	52.38	52.88	....	Hubbard, O.	Y1	56.00	56.50	56.50	
Birmingham	R2	52.38	52.88	....	Sharpsville, Pa.	S6	56.00	56.50	56.50	
Birmingham	U6	....	52.88	56.50†	Youngstown	Y1	56.00	56.50	57.00	
Badsden, Ala.	R2	52.38	52.88	....	Youngstown	U5	56.00	....	57.00	
Cincinnati, deld.	....	60.58	....	Mansfield, O., deld.	....	60.90	....	61.40	61.90	
<i>Buffalo District</i>		Basic 56.00		56.50	Duluth	I-3	56.00	56.50	56.50	
Buffalo	H1, R2	56.00	56.50	57.00	Erie, Pa.	I-3	56.00	56.50	57.00	
Tonawanda, N.Y.	W12	56.00	56.50	57.00	Everett, Mass.	E1	60.50	61.00	61.50	
O. Tonawanda, N.Y.	T9	....	56.50	57.00	Fontana, Calif.	K1	62.00	62.50	....
Boston, deld.	....	66.65	67.15	67.65	Geneva, Utah	C11	56.00	56.50	....
Rochester, N.Y., deld.	....	59.02	59.52	60.02	Granite City, Ill.	G4	57.90	58.40	58.90	
Syracuse, N.Y., deld.	....	60.12	60.62	61.12	Ironton, Utah	C11	56.00	56.50	....
<i>Chicago District</i>		Basic 56.00		56.50	LoneStar, Texas	L6	52.00	52.50*	52.50	
Chicago	I-3	56.00	56.50	57.00	Minnequa, Colo.	C10	58.00	59.00	59.00	
Chicago	R2	56.00	....	56.50	Rockwood, Tenn.	T2	....	52.50*	56.50	
Mary, Ind.	U5	56.00	....	56.50	Toledo, O.	I-3	56.00	56.50	57.00	
Indiana Harbor, Ind.	I-2	56.00	....	56.50	Cincinnati, deld.	....	61.76	62.26	....
O. Chicago, Ill.	W14, Y1	56.00	56.50	56.50	*Low phos, southern grade. †Phos. 0.30 max.				....
O. Chicago, Ill.	U5	56.00	....	56.50	PIG IRON DIFFERENTIALS				....
Milwaukee, deld.	....	58.17	58.67	58.67	Silicon:	Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.				....
Muskegon, Mich., deld.	....	62.80	62.80	....	Phosphorus:	Deduct 38 cents per ton for P content of 0.70% and over.				....
<i>Cleveland District</i>		Basic 56.00		56.50	Manganese:	Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.				....
Cleveland, A, R2	....	56.00	56.50	56.50	Nickel:	Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.				....
Akron, O., deld.	....	58.75	59.25	59.25	BLAST FURNACE SILVERY PIG IRON, Gross Ton				....	....
Lorain, O. N3	....	56.00	....	57.00	(Base 6.00-6.50% silicon; add \$1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)	....	....	....	....	....
<i>Mid-Atlantic District</i>		Basic 58.00		58.50	Jackson, O.	G2, J1	....	....	....	\$65.00
Bethlehem, Pa.	B2	58.00	58.50	59.00	Buffalo	H1	....	....	....	66.25
New York, deld.	....	62.28	62.78	....	ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton				....	....
Newark, deld.	....	61.02	61.52	62.02	(Base 14.01-14.50% silicon; add \$1 for each 0.50% Si to 18%; \$1 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P)	....	....	....	....	....
Birdsboro, Pa.	B10	58.00	58.50	....	Niagara Falls, N.Y.	P15	....	....	....	\$80.50
Chester, Pa.	C31	....	48.50	49.00	Keokuk, Iowa,	(Open-hearth & Fdry, freight allowed K2)	....	....	....	85.00
Philadelphia, deld.	....	50.16	50.66	....	Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	....	....	....	....	88.00
Steeltown, Pa.	B2	58.00	58.50	59.00	LOW PHOSPHORUS PIG IRON, Gross Ton				....	....
Swedeland, Pa.	A3	58.00	58.50	59.00	Cleveland	A7 (Intermediate)	....	....	....	\$61.00
Philadelphia, deld.	....	59.66	60.16	60.66	Lyles, Tenn.	T3	....	....	....	70.00
Troy, N.Y.	R2	58.00	58.50	59.00	Rockwood, Tenn.	T3	....	....	....	70.00
<i>Pittsburgh District</i>		Basic 56.00		56.50	Steelton, Pa.	B2	....	....	....	64.00
Neville Island, Pa.	P6	56.00	56.50	56.50	Philadelphia, deld.	....	....	....	....	67.55
Pittsburgh (N&S sides), Aliquippa, deld.	....	57.87	57.87	58.37	Troy, N.Y.	R2	....	....	....	64.00
McKees Rocks, deld.	....	57.54	57.54	58.04	T				....	....
Lawrenceville, Homestead, Wilmerding, Monaca, deld.	....	58.16	58.16	58.66	SHEETS				....	....
Verona, Trafford, deld.	....	58.19	58.89	58.69	BARS				....	....
Brackenridge, deld.	....	58.45	58.95	58.95	STANDARD PLATES				....	....
Bessemer, Pa.	U5	56.00	....	56.50	STRUCTURAL SHAPES				....	....
Claireton, Rankin, So. Duquesne, Pa.	U5	56.00	....	....	CARBON PLATES				....	....
McKeesport, Pa.	N3	56.00	....	....	FLOOR PLATES				....	....
Midland, Pa.	C18	56.00	....	....	SHEET METAL				....	....

Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; Philadelphia, New York, Boston and Los Angeles, 10 cents; Buffalo, 25 cents on C.R. and galvanized sheets, C.F. and alloy bars and 20 cents on other commodities; Houston, Seattle, Spokane, Wash., no charge.

SHEETS		STRIP		BARS		PLATES						
Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§	Standard Structural Shapes	Carbon	Floor	
Baltimore	6.02	7.51	7.79	....	6.69	....	6.68	8.02§	12.54	6.72	6.37	7.76
Birmingham	6.35	7.35	8.26 ²	....	6.60	....	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	45.28 ⁹	7.47	....	7.20	8.60	12.30	7.49	7.37	8.50
Buffalo	6.35	7.40	8.84	....	6.70	....	6.50	7.40	12.00	6.72	6.65	7.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	....	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	46.06	6.62	....	6.51	7.25	11.75	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.30	46.10	6.86	....	6.75	7.55	12.00	6.86	6.81	7.89
Cleveland	6.33	7.38	8.25	46.16	6.72	....	6.57	7.35	11.81	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.54	11.95	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	....	5.50	7.45 ⁴	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.30	....	7.60	7.35	8.75
Los Angeles	7.50	9.35	9.95	50.15	7.85	11.75	7.45	10.15	13.15	7.65	7.45	9.55
Milwaukee	6.47	7.47	8.39	....	6.71	....	6.60	7.44	11.84	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	....	6.86	7.60	....	7.04	6.87	....
New York	6.97	7.91	8.79	44.95	7.56	....	7.37	8.73 ⁶	12.13	7.38	7.27	8.68
Norfolk, Va.	7.00	....	....	....	7.10	....	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.26	41.98 ⁹	6.96	8.80	6.74	7.86 ⁸	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	46.00	6.72	....	6.51	7.35	11.75	6.69	6.52	7.64
Portland, Oreg.	7.00	7.75	8.90	48.50	7.25	....	7.05	10.20	14.00	7.00	6.85	8.75
Richmond, Va.	6.43	7.39	8.67	....	6.77	....	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	....	6.80	7.64 ⁸	12.04	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	....	7.17	8.01	....	7.35	7.18	8.30
San Francisco	7.55	8.95	9.40	51.65	7.80	....	7.35	10.05	13.05	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	51.00	8.20	....	7.80	10.95	13.50	7.75	7.80	9.60
Spokane	8.35	9.65 ⁷	10.15	....	7.80	....	7.80	10.85 ⁸	14.25	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	....	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11.50-cent zinc except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **½-in. and heavier; §§as annealed; §§prices include \$2 for crating; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; 2-500 to 9999 lb; 4-4000 lb and over; 5-1000 to 1999 lb; 6-1000 lb and over; 7-1500 to 3999 lb; 8-2000 to 3999 lb; 9-f.o.b. local delivery in lots of 10,000 lb and over.



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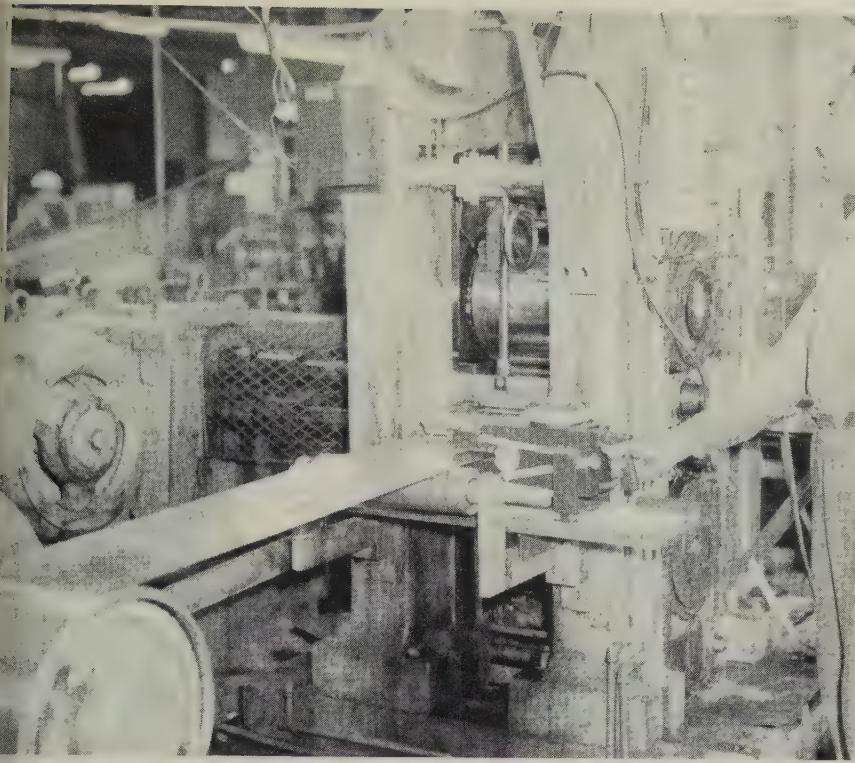
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Equipment like this 4-high mill typifies a trend as . . .

Warehouses Tailor-Make Markets

DIVERSIFICATION is changing the face of the warehouse industry as it offers its customers an increasing variety of services—some of which are drawn straight from the pages of mill books. While they still play their traditional role as intermediaries between mills and fabricators, warehouses also are becoming prefabricators and industrial engineers of sorts.

Take the case of Eastern Brass & Copper Co. Inc., New York. It has adapted its operations to its markets. Result: A wide variety of special services and combinations of services. Herbert Barchoff, president of the company, says: "Sure, there are other companies which do some of the things we do, and there are some which offer services which we don't. But I doubt if you'll find any warehouse that duplicates the range of services we offer or the machinery we operate."

Ingenuity—That statement isn't hard to believe as you look around this modern plant. Much of the machinery never has seen the inside of another plant. That's because Eastern is in a way an engineering outfit as well as a warehouse.

Herb Barchoff and his associates—there are about 85 in the plant—thrive on jobs that mills and other warehouses don't want because they

are "too out of the ordinary." If the job requires some special machinery, Mr. Barchoff, Jack Rothschild—vice president and a graduate engineer—and the boys in the machine shop put their heads together and devise the machine needed. Everybody gets into the act. They are encouraged to do so by a suggestion plan which pays cash rewards for useful ideas.

To the Rescue—For instance, an engineering firm required a stainless

steel rod in a special shape not obtainable at the mills. It was needed to finish work on a Navy contract. The firm went to Eastern with blueprints, and the boys in the machine shop made a special roller for the job.

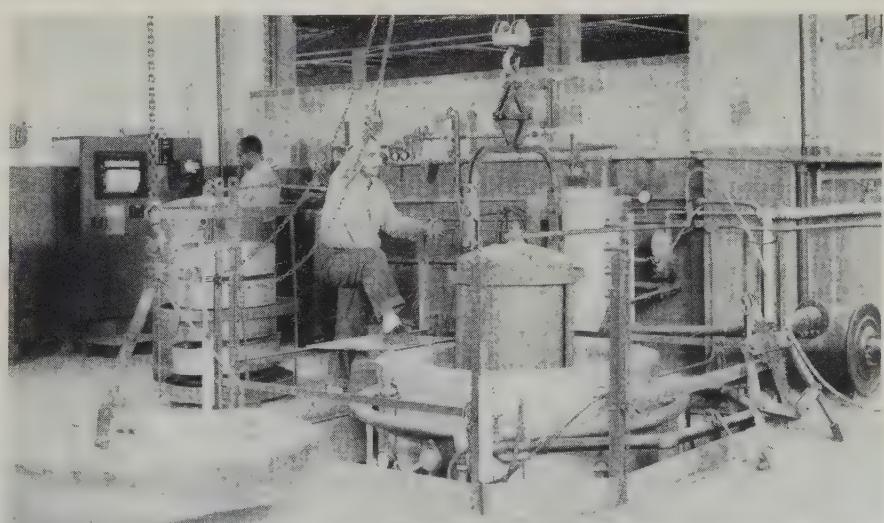
Such special machinery may cost a considerable amount of time and money, but "we've been stuck with our investment only once," Mr. Barchoff says. "Specs were changed on this particular job, and we didn't get the order. But we made a good friend by taking the time and effort to figure the problem out, and we still have the machinery. If that customer ever changes his mind about specifications, we're back in business."

In the meantime, Eastern probably will find another use for the machine.

Progressive—In many respects, this company is typical of the progressive warehouses which are shooting for that custom business that mills can't or won't take because they can't fit it into their schedules.

Eastern has the usual assortment of equipment for slitting, shearing, flattening, circling and round edging. It begins to depart from the ordinary with its controlled-atmosphere annealing furnace. It is one of the few warehouses in the country that has 2-high and 4-high, close-tolerance rolling mills. It probably is the only place in the country where you can find 213 patterns for embossing and engraving sheet metal and wire.

The furnace and rolling mills have been big factors in the growth of this company. Customers have found that they can save metal costs by bringing obsolete stock to Eastern, where proper heat treating and rerolling can change the temper and gage of the metal and make it useful. It



This controlled-atmosphere annealing furnace at Eastern Brass & Copper is one reason why the company can engineer its services to the demands of the market



then can be slit into any width the customer wants—and all this is done within the tightest time schedule.

Matter of Cost—Warehouses like Eastern Brass & Copper didn't spring into being overnight. They have been diversifying their services for the last 10 or 15 years. The need arose because labor and equipment costs have grown to a point where the individual manufacturer can't afford to perform these functions.

Today, an expensive slitter, for example, may lie idle 75 per cent of the time in a metalworking plant. That ties up capital that could be spent more efficiently for other machinery which would be used full time. The warehouseman buys a slitter, and, in effect, rents it to several manufacturers for a service charge.

Officials of the American Steel Warehouse Association say this trend in both steel and nonferrous warehouses will continue as long as labor and equipment costs remain high. Eastern Brass & Copper, and a few companies like it, are setting the pace.

Warehouse . . .

Warehouse Prices, Page 129

Bookings by steel distributors continue to gain momentum and may hit the year's peak late this month. Encouraging, too, is that buying is well diversified as to products and consuming industries. Orders are larger and more numerous, especially for sheet and construction materials.

Present buying pickup is viewed as healthy because the steel is needed for immediate and nearby production needs, in contrast with late 1952 and early 1953 demand when buying was mainly for inventory.

Prices are steady, with little change anticipated until perhaps July. At that time, if not sooner, higher mill prices may be posted because of increased wage rates.

Cincinnati district warehouses entered May with substantial carry-over business from April. Most items can be readily replaced from stock, so that the gray market bugaboo has not reared its head.

Stainless Steel . . .

Stainless Steel Prices, Page 128

April shipments of electrical and stainless steel at Allegheny Ludlum Steel Corp., Pittsburgh, will be above the first-quarter rate, reports E. J. Hanley, president. He adds that new orders booked in April will exceed shipments. Barring a work stoppage, all signs point to a good third quarter for stainless steel.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 125 & 126

Sellers of hot and cold-rolled sheets also galvanized, could readily book orders to capacity for the entire third quarter if they so desired. In fact, some of them have accepted business that far ahead. Others, however, are hesitant to commit themselves too far forward, pending clarification of the market outlook generally. All mills, though, are booked up solidly through July.

With higher steel prices a possibility after midyear (following wage hike), it is difficult to appraise the actual consuming needs of users currently. Retooling of new auto models, now planned for August by some motorcar builders, may take off some of the demand pressure on the sheet mills. Still, producers of cold-rolled sheets may be entertaining more tonnage this summer than they can comfortably handle, even though vacation interruptions and hot weather should cut trail general manufacturing operations.

Specialties, particularly enameling stock and electrical sheets, are in active demand in the East, with producers sold well into the third quarter. Mill salesmen at Pittsburgh think third-quarter business will be surprisingly good should an auto strike be averted. July shipments, they say, will be heavy while something of a sag may be experienced in August, which may turn out to be the dullest month of the quarter.

Demand is unrelenting at Chicago. Automotive needs are pacing requirements for cold rolled, with the auto builders specifying all the tonnage they can get for July and August. So far they have shown relatively little interest in September needs. Indications are the second quarter carryover in the area will amount to four or five weeks production.

Users of cold-rolled sheets in New England are not sure as to the likely extent of any cutback in auto needs this summer. They expect there will be some decline in auto volume, but other consumer orders, scheduled for July to September rolling, appear sufficient to support near-capacity mill operations. Carryover tonnage and vacation production losses are certain to narrow openings in summer mill rolling schedules.

Producers are reported building order backlogs in stainless sheet. Some schedules are said to extend to September. Also, schedules extend about as far on electrical, enameling, galvanized and electrocoated sheet. That some of this buying is for in-

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ventory seems apparent because pressure for deliveries is lacking despite the mill lag in meeting shipment promises.

Republic Steel Corp., Cleveland, has issued a revised list of extras on galvannealed sheets, effective Apr. 27. The previous list was dated Mar. 18, 1954. Changes are few, being confined to dimensional extras for gage and width, order quantity and item quantity extras and a couple minor changes in packaging extras.

Sharon Steel Corp., has contracted with the Gas Machinery Co., Cleveland, for two preheat furnaces to increase production in its Catenary-type strip annealing furnaces at its Farrell Works, Farrell, Pa.

Steel Bars . . .

Bar Prices, Page 124

Most leading producers of hot-rolled bars are booked up through July, and increasing tonnage is coming out for delivery beyond that month. Cold-drawn bars can still be had for delivery in July, but, in general, that month is pretty well booked up.

Jobbers are specifying less freely in the East, but volume is more than holding up in other directions. Deliveries on hot-rolled alloy have jumped to about seven weeks in some cases. On cold-drawn alloys shipments are even more extended. In the case of cold-drawn, limited supplies of hot stock provide the bottleneck rather than drawing facilities.

Buying is accelerating in the Chicago area. Mills there are finding it more difficult to accommodate customers because their rolling cycles are lengthening steadily. Possible higher prices in the third quarter are encouraging buying of tonnage that can be shipped this quarter. It is doubtful, however, if anyone is able to expand inventory appreciably.

Philadelphia sellers still have some tonnage left for July shipment. Their schedules for that month, however, are filling rapidly. Trading is diversified. Cold-finishing, who express satisfaction at the rate of incoming business, are concerned about supplies of hot stock required to meet pressing demands.

In New England, consumers are covering requirements for the third quarter more actively than was the case earlier this year. Order books are practically filled through June, although some alloy tonnage can be worked into schedules for that month.

Demand is fairly diversified at Pittsburgh and Cleveland, but automotive requirements continue outstanding at both points. Signs point to continued strong demand well in-

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TONAWANDA, NEW YORK

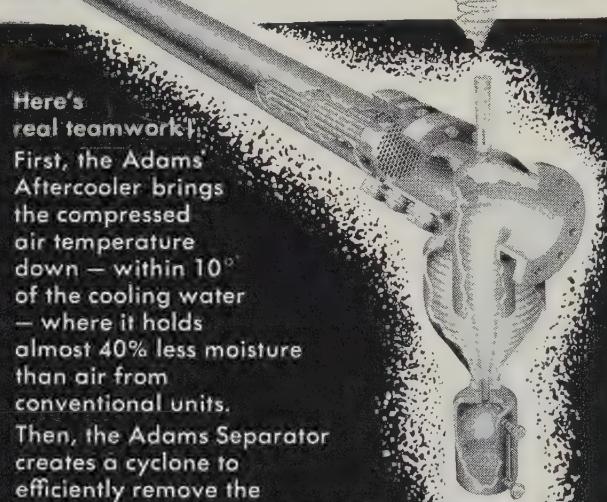
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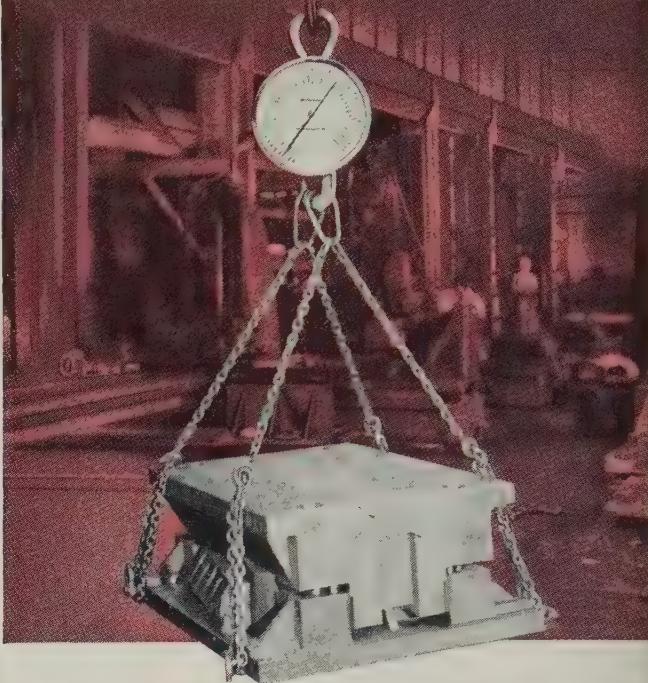
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the third quarter. On the West Coast, reduced requirements for aircraft parts are reflected in some lessening in bar needs.

Lates . . .

Plate Prices, Page 124

Pressure for steel plates continues strong. Most producers are booked so solidly through July, and could look full for the entire third quarter. Little in the way of hedge buying against a price increase in the third quarter is now possible.

Supply continues to tighten steadily at Pittsburgh where the mills report prospects indicate strong demand throughout the third quarter. July sales are expected to be high, notably on line pipe, boilers and tanks. Even railroads are reported showing more interest in needs, though their total consumption is trailing that of recent years.

In the East, fabricators of oil storage tanks appear to be particularly bullish. This applies to shops turning out everything from household to field storage tanks. Electrical equipment makers also are active buyers, though the threat of a strike in the fall hangs over the industry. Fabricators, generally, are cutting up a lot of steel plate in the district, while ship and railroad business is undergoing a mild upswing. At New York, shipwork is confined largely to repairs, but demand is on the plus side, compared with a year ago.

Chemical requirements are disappointing to district sellers, and demand from boiler manufacturers is described as spotty. However, the over-all area market situation is brisk, with more tonnage moving through warehouses and efforts being expended by consumers to build up their inventories at a noticeably faster pace than at any time this year.

One leading mill in the Philadelphia area is booking August delivery tonnage only, preferring to take nothing beyond that month for the present. Other district sellers, except one, are booked up solidly through July. The exception should be booked full shortly.

West coast plate fabricators are optimistic, although small shops are having difficulty developing new business. Largest plate project pending in the district involves 1000 tons for Tacoma's (Wash.) Mayfield dam. Bids on this job have been postponed from May 27 to June 3. Some 3000 tons of reinforcing bars and 500 tons of shapes also are required for this project. Unstated plate tonnages are involved in storage tanks at six military installations in Alaska. Subcontracts for 450 tons to go into seven

Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season; gross ton, 51.50% iron natural, rail or vessel, lower lake ports)

Old range bessemer	\$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, del'd. E. Pa.
Foundry and basic 52-62% concentrates
contract

17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports
Swedish basic, 60-68% 20.00
N. African hematite (spot) nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot). 24.00-26.00

Tungsten Ore

Net ton unit, before duty
Foreign, wolframite, good commercial
quality \$25.00-\$26.00
Domestic, scheelite, mine 63.00

Manganese Ore

Mn 48%, nearby, 85c-87c per long ton unit
c.i.f. U. S. ports, duty for buyer's account;
16-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African

48% 2.8:1 nom. \$40.00-\$42.00
18% 3:1 42.00-44.00
18% no ratio 32.00-34.00

South African Transvaal

14% no ratio \$19.00-\$20.00
18% no ratio 31.00-32.00

Domestic

Rail nearest seller

18% 3:1 \$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked \$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard
56-60% \$3.25-\$3.80
65% 4.15-4.25

Vanadium Ore

Cents per lb, V₂O₅ content, del'd. mills
Domestic 31.00

Runners (per 1000)

Reedsdale, Johnstown, Bridgeburg, Pa., \$183.50;
Clearfield, Pa., \$185.50; St. Louis, \$195.80;
Athens, Tex., \$191.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., \$14.50; Thornton, McCook, Ill., \$15.10; Dolly Sliding, Bonne Terre, Mo., \$13.65.

Magnesite (per net ton)

Domestic, dead-burned bulk, 1/4-in. grains with fines: Luning, Nev., Chewelah, Wash., \$38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace \$13.50-\$14.00
Connellsville, foundry 16.50-17.00

Oven Foundry Coke

Kearny, N. J., ovens \$24.50
Camden, N. J., ovens 24.00
Everett, Mass., ovens

New England, del'd. *26.05
Chicago, ovens 24.50
Chicago, del'd. 26.00

Terre Haute, Ind., ovens 24.05
Milwaukee, ovens 25.25

Indianapolis, ovens 24.25
Cincinnati, del'd. 25.85

Painesville, O., ovens 25.50
Cleveland, del'd. 27.43

Erie, Pa., ovens 25.00
Birmingham, ovens 22.65

Cincinnati, del'd. 27.58

Buffalo, ovens 25.00
Buffalo, del'd. 26.25

Lone Star, Tex., ovens 18.50

Philadelphia, ovens 24.00

Swedenland, Pa., ovens 24.00

St. Louis, ovens 26.00

St. Louis, del'd. 23.75

Portsmouth, O., ovens 24.00

Cincinnati, O., del'd. 26.62

Detroit, ovens 25.50
Detroit, del'd. 26.50

Pontiac, del'd. 27.06

Saginaw, del'd. 28.58

*Or within \$4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol 36.00
Toluol, one deg. 32.00-35.00
Industrial xylo 32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia \$42-\$45
Birmingham area 42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars 18.00

c.l. drums 19.00

i.c.l. drums 19.50

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF₂ content 72.5%. \$35-\$36; 70%, \$32-\$33; 60%, \$28-\$29. Imported, net tons, duty paid, metallurgical grade: European, \$28-\$30; Mexican, \$25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE

—Inches—

Diam Length Per

2 24 100 lb

2½ 30 47.75

3 40 30.00

4 40 28.50

5½ 40 28.25

6 60 25.50

7 60 25.25

8, 9, 10 60 22.75

12 72 26.00

14 60 22.50

16 72 21.50

17 60 22.00

18 72 21.50

20 72 21.25

CARBON

8 60 11.40

14, 12, 10 60 11.10

14 72 10.25

17 60 10.25

17 72 9.85

20 84 9.85

20 90 9.65

24 72, 84 9.85

24 96 9.60

30 84 9.75

40, 35 110 9.50

40 100 9.50

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., \$94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwenville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., \$114; Salina, Pa., \$119; Niles, O., \$125; Los Angeles, Pittsburg, Calif., \$137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., \$120; Warren, Niles, O., Hays, Pa., \$125; Morrisville, Pa., \$123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., \$130; Cutler, Utah, \$121.55; Los Angeles, \$127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., \$137; Morrisville, Pa., Niles, O., \$140; Joliet, Ill., \$143.

Semisilica Brick (per 1000)

Clearfield, Pa., \$130; Philadelphia, \$116; Woodbridge, N. J., \$114.

Insulating Fire Brick (per 1000)

2300° F: Massillon, O., \$178.50; Clearfield, Pa., \$213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., \$206; Vandalia, Mo., \$214.10; Portsmouth, O., \$207.50; Bessemer, Ala., \$212.80.

Ladie Brick (per 1000)

Dry Pressed: Bessemer, Ala., \$64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., \$77.50; Wellsly, O., \$81.50; Clearfield, Pa., Portsmouth, O., \$87; Perla, Ark., \$109; Los Angeles \$110.25; Pittsburgh, Calif., \$111.30.

High-Alumina Bricks (per 1000)

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., \$181; Danville, Ill., \$169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., \$225; Danville, Ill., \$213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$260; Danville, Ill., \$258; Clearfield, Pa., \$267.

Sleeves (per 1000)

Reedsdale, Johnstown, Bridgeburg, Pa., \$147; Clearfield, Pa., \$148.50; St. Louis, \$159.30; Athens, Tex., \$155.

Nozzles (per 1000)

Reedsdale, Pa., \$234.70; Johnstown, Pa., \$240.70; Clearfield, Pa., \$241.40; St. Louis, \$259.45; Athens, Tex., \$247.70; Bridgeburg, Pa., \$267.50.

storage tanks at Adak, Alaska, were placed a week ago.

Lengthening deliveries are increasing in the Chicago market. District fabricators, with expanding business, are jolted to find they can't arrange for mills to accommodate their needs except on an extended shipment basis. The two biggest consuming influences are pipelines and freight car building and repair.

Heavier bookings have moved out plate deliveries to August in New England in the case of some producers. Tank requirements in the area are larger and some fabricating shops are buying for better inventory. The same is true of warehouses. Navy inquiry for May is ahead of that last month.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 124

General construction, roadwork and military installations in the Pacific Northwest and Alaska are seen providing substantial demand for reinforcing bars over the coming weeks. Currently, district rolling mills are operating at a much higher rate than a year ago, with order backlogs described as fair.

At Los Angeles, the spring flood

of engineering construction is imparting a brisk tone to reinforcing business. Fabricators, however, are beating the bushes for orders. Competition continues keen.

Wire . . .

Wire Prices, Pages 126 & 127

Wire rod supplies are becoming increasingly tight, due particularly to requirements of converters. Wiremakers, generally, are entertaining good business in both merchant and manufacturers classifications. In the latter automotive requirements (direct and indirect) are setting the pace. As time goes on, the third quarter looks more promising to mid-western producers.

American Steel & Wire plants will close the first two weeks of July for the customary vacation period. This is being anticipated in shipping schedules.

Orders are geared close to consumption in New England. While some July and third-quarter volume is being booked, forward buying is usually against firm contract needs. Only on welded reinforcing fabric are backlog heavy in the district, as most industrial users buy on a month-to-month basis and stress delivery with short lead time.

Tubular Goods . . .

Tubular Goods Prices, Page 128

All signs point to substantial third-quarter demand for tubular goods. Consuming industries plan no summer letdown in requirements. Well drilling is pushing shipments of seamless tube for oil country use to new heights. Orders are coming in for delivery well into the third quarter.

Standard seamless tube sales are strong and are expected to hold present levels through the second quarter. Mills are well booked through this quarter and are taking orders for the following three months. Butt-weld shipments continue to improve, although some tonnage still is available for shipment in the second quarter.

Cast iron pipe demand continues active in the Pacific Northwest. Awards are pending on about 700 tons in the area, while Yakima, Wash., will take bids May 9 for 200 tons. Also, an unstated tonnage is required for an Anchorage, Alaska, project, bids on which will be taken May 18.

Kaiser Steel Corp., Oakland, Calif., is offering to buy the large diameter pipe fabricating business of Basalt

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Gentle tumbling of the work pieces by slow retort rotation—one revolution every four minutes—assures uniform heating and exposure to the controlled atmosphere. Result: better products.

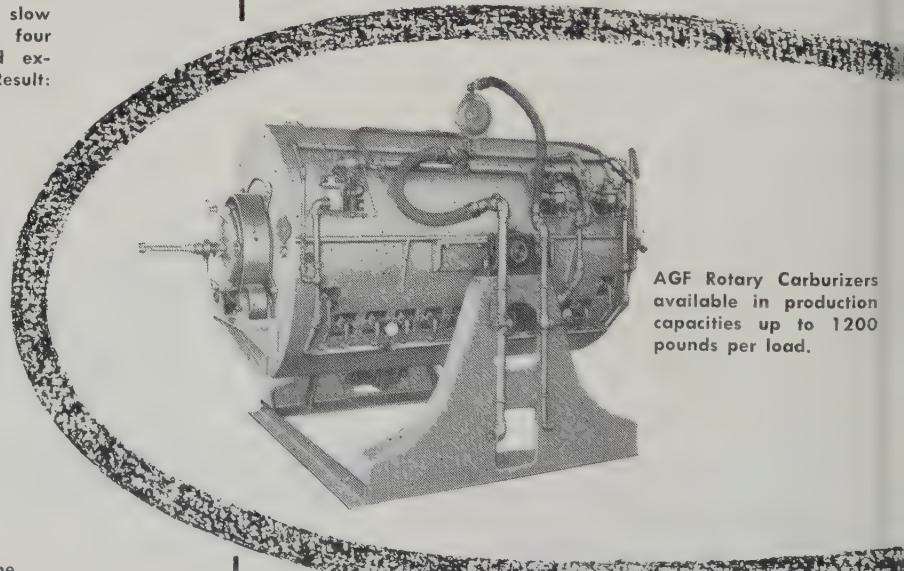
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- only necessary labor required during the charging and discharging operation. Large production lots quickly handled with mechanized tilting.
- only the work enters and leaves the furnace retort. Chains, conveyors, trays and other inefficient mechanisms are eliminated.
- alloy costs are decreased. The retort remains in the furnace at all times. Rotation and the use of an ample combustion chamber further assure maximum alloy life.
- AGF Carburizers are flexible. The same one can be used to clean, harden, anneal, normalize, etc. a wide variety of work without modification.



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COMPANY _____
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Current Ferroalloy Quotations

MANGANESE ALLOYS

legeleisen: (19-21% Mn, 1-3% Si), Carlot
per gross ton \$86, Palmerton, Pa.; \$87 Clairton
and Duquesne, Pa.

8 to 19% Mn) \$84 per ton, Palmerton, Pa.;
\$5 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7%
approx.). Base price per net ton \$190, Clairton,
Duquesne, Johnstown and Sheridan, Pa.; Alloy,
W. Va.; Ashtabula, Marietta, Philo, O.; Shef-
field, Ala.; Portland, Ore., and Tacoma,
Wash. Add or subtract \$2.00 for each 1% or
fraction thereof of contained manganese over
8% or under 74%, respectively.

Mn 79-81%) Lump \$198 per net ton, f.o.b.
Anaconda or Great Falls, Mont. Add \$2.60 for
each 1% above 81%; subtract \$2.60 for each
1% below 76%, fractions in proportion to
nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade:
Mn 85-90%). Carload, lump, bulk, max,
0.07% C, 29.95c per lb of contained Mn, car-
load packed 30.7c, ton lots 31.8c, less ton
3c. Delivered. Deduct 1.5c for max 0.15%
grade from above prices, 3c for max, 0.30%
C, 3.5c for max 0.50% C, and 6.5c for max
5% C—max 7% Si. **Special Grade:** (Mn
0% min, C 0.07% max, P 0.06% max).
Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%,
1.5% max). Carload, lump, bulk 21.35c per
lb of contained Mn, carload packed 22.1c, ton
lot 23.2c, less ton 24.4c. Delivered. Spot,
add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe
1% max, Si 1% max, C 0.2% max). Car-
load, lump, bulk, 45c per lb of metal;
packed, 45.75c; ton lot 47.25c; less ton lots
49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads.
30c; 2000 lb to min carloads, 32c; 250 lb to
1999 lb 34c. Premium for hydrogen-removed
metal, 0.75c per lb. Prices are f.o.b. cars,
Knoxville, Tenn., freight allowed to St. Louis
or to any point east of Mississippi; or f.o.b.
Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract,
lump, bulk 1.50% C grade, 18-20% Si, 11.00c
per lb of alloy, carload packed 11.75c, ton lots
12.65c, less ton 13.65c. Freight allowed. For
2% C grade, Si 15-17%, deduct 0.2c from
above prices. For 3% C grade, Si 12-14.5%,
deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al
3.5% max, Si 4% max, C 0.10% max).
Contract, ton lots 2" x D, \$1.50 per lb of
contained Ti; less ton \$1.55. (Ti 38-43%, Al
8% max, Si 4% max, C 0.10% max). Ton
lots \$1.35, less ton \$1.37, f.o.b. Niagara Falls,
N. Y., freight allowed to St. Louis. Spot,
add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C
6-8%). Contract \$177 per ton, f.o.b. Ni-
agara Falls, N. Y., freight allowed to destina-
tions east of Mississippi river and north of
Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C
2-4.5%). Contract \$195 per ton, f.o.b. Ni-
agara Falls, N. Y., freight not exceeding St.
Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l.,
lump, bulk 24.75c per lb of contained Cr; c.l.
packed 25.65c, ton lot 26.80c, less ton 28.20c.
Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Con-
tract, carload lump, bulk, C 0.025% max,
(Simplex 34.50c per lb contained Cr, 0.03% C
38.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10%
C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c,
0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c,
2% C 32.75c. Carload packed add 1.1c, ton
lot add 2.2c, less ton add 3.9c. Delivered. Spot,
add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-
66%, C 5-7%). Contract, c.l. 8 M x D, bulk,
26.25c per lb contained Cr. Packed, c.l.
27.15c, ton 28.50c, less ton 30.25c. Delivered.
Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-
54%, Si 28-32%, C 1.25% max). Contract,
carload, packed, 8 M x D, 18.35c per lb of
alloy; ton lot 19.2c; less ton lot, 20.4c, deliv-
ered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%.
Si 42-49%, C 0.05% max). Contract, carload,
lump, 4" x down and 2" x down, bulk, 24.75c
per lb of contained chromium plus 12c per
pound of contained silicon; 1" x down, bulk
24.90c per pound of contained chromium plus
12.2c per pound of contained silicon. F.o.b.
plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe).
Contract, 1" x D; packed, max 0.50%, carload
\$1.16, ton lots \$1.18; less ton \$1.20. Delivered.
Spot, add 5c. Prices on 0.10 per cent carbon
grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-
55%, Si 8-12% max, C 3-3.5% max). Con-
tract, any quantity, \$3.00 per lb of contained
V. Delivered, Spot, add 10c. **Crucible-Special
Grades** (V 50-55%, Si 2-3.5% max, C 0.5-
1% max) \$3.10. **Primos and High Speed
Grades** (V 50-55%, Si 1.50% max C 0.20%
max) \$3.20.

Grainal: Vanadium Grainal No. 1, \$1 per lb;
No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots
\$1.28 per lb contained V₂O₅, freight allowed.
Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump,
bulk, 20.0c per lb of contained Si, packed
21.40c; ton lot 22.50c f.o.b. Niagara Falls,
freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump,
bulk, 12c per lb of contained Si, carload
packed 13.6c, ton lot 15.5c, less ton 16.7c.
Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40%
max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump,
bulk, 13.5c per pound contained silicon; car-
load packed 14.85c; ton lots 16.05c; less ton,
17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump,
bulk, 14.4c per lb of contained Si, carload
packed 15.7c, ton lot 16.85c, less ton 18.1c.
Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump,
bulk, 17.25c per lb of contained Si, carload
packed 18.45c, ton lot 19.4c, less ton 20.45c.
Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe).
C.l. lump, bulk, regular 18.5c per lb of Si,
c.l. packed 19.7c, ton lot 20.6c, less ton 21.8c.
Add 0.5c for max, 0.10% calcium grade. De-
duct 0.5c for max 2% Fe grade analyzing min
96% Si. Spot, add 0.25c.

Alsifer. (Approx. 20% Al, 40% Si, 40% Fe).
Contract, basis f.o.b. Niagara Falls, N. Y.,
lump, carload, bulk, 9.25c per lb of alloy,
ton lots packed 10.15c, 200 to 1999 lb 10.50c,
smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-
43%, Fe 40-45%, C 0.20% max). Contract,
c.l. lump, bulk 8.0c per lb of alloy, c.l.
packed 8.75c, ton lot 9.5c, less ton 10.35c.
Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-
52%, Fe 8-12%, C 0.50% max). Contract,
carload, lump, packed 25.25c per lb of alloy,
ton lot 26c, less ton 27.25c. Freight allowed.
Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max,
Al 0.50% max, C 0.50% max). Contract,
100 lb or more 1" x D, \$1.20 per lb of al-
loy. Less than 100 lb \$1.30. Delivered, spot
add 5c. F.o.b. Washington, Pa., prices, 100
lb and over, are as follows: Grade A (10-
14% B) 85c per pound; Grade B (14-18% B)
\$1.20; Grade C (19% min M) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si). \$5.25 per
lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb;
smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump,
carloads 9.50c per lb f.o.b. Suspension Bridge,
N. Y., freight allowed same as high-carbon
ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 18-20%, Mn
14-18% and Si 53-59%). Contract, carload,
lump, bulk 20.0c per lb of alloy, carload
packed 20.8c, ton lot 22.3c, less ton 23.3c.
Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe
1.50-3%). Contract, carload, lump, bulk 19.0c
per lb of alloy, carload packed 20.2c, ton
lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRICKETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb
each and containing exactly 2 lb of Cr). Con-
tract, carload, bulk, 16.05c per lb of briquet,
carload packed 16.95c, ton 17.75c, less ton
18.65c. Deld. Add 0.25c for notching, Spot,
add 0.25c.

Ferromanganese Briquets: (Weighing approx.
3 lb and containing exactly 2 lb of Mn).
Contract, carload, bulk 11.85c per lb of briquet,
c.l. packaged 12.85c, ton lot 13.65c, less ton
14.55c. Delivered. Add 0.25c for notching
Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx.
3 1/2 lb and containing exactly 2 lb of Mn and
approx. 1/2 lb of Si). Contract, c.l. bulk
12.45c per lb of briquet, c.l. packaged 13.45c,
ton lot 14.25c, less ton 15.15c. Delivered. Add
0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing ap-
prox. 5 lb and containing exactly 2 lb of Si).
Contract, carload, bulk 6.55c per lb of briquet.
Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c.
Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 1/2 lb and con-
taining exactly 1 lb of Si). Carload, bulk
6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton
9.4c. Delivered. Add 0.25c for notching,
small size only. Spot, add 0.25c.

Molybdc-Oxide Briquets: (Containing 2 1/2 lb
of Mo each) \$1.14 per pound of Mo contained,
f.o.b. Langloeth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more
\$3.80 per lb of contained W; 2000 lb W to
5000 lb W, \$3.90; less than 2000 lb W, \$4.02,
f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max,
C 0.4% max). Contract, ton lot, 2" x D,
\$12 per lb of contained Cb, less ton \$12.05.
Delivered. Spot, add 10c.

Ferrotitanium—Columbium: (Cb 40% approx.,
Ta 20% approx., and Cb and Ta 60% min, C
0.30% max) ton lots, 2" x D, \$6.25 per lb
of contained Cb plus Ta., deld.; less ton lots
\$6.30.

Silicaf Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%,
Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads
packed 1" x D, 45c per lb of alloy, ton lot
47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%,
Fe 20% approx.). Contract, carload, packed,
1/2" x 12 M, 17.5c per lb of alloy, ton lots
18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-
11%). C.l. packed, 17.50c per lb of alloy, ton lots
18.50c; less ton lots 20c, f.o.b. Niagara
Falls, N. Y.; freight allowed to St. Louis.

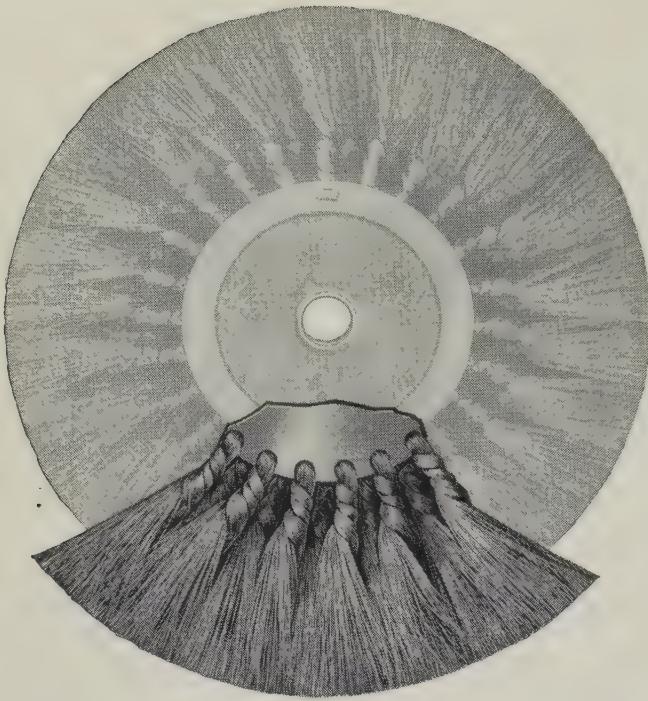
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%,
Mn 8-11%). C.l. packed 16.6c per lb of alloy;
ton lots 18.10c; less ton lots 19.35c. Niagara
Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal.
Fe). Lump, carload, bulk 15.50c. Packed c.l.
16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb
17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P
content with unitage of \$4 for each 1% of P
above or below the base); carloads, f.o.b.
sellers' works, Mt. Pleasant, Siglo, Tenn.,
\$90 per gross ton.

Ferromolybdenum: (55-75%). Per lb com-
tained Mo, in 200-lb containers, f.o.b. Lange-
loeth, Pa., \$1.46 in all sizes except powdered
which is \$1.57; Washington, Pa., furnace,
any quantity, \$1.46.

Technical Molybdc-Oxide: Per lb contained
Mo, f.o.b. Langloeth, Pa., \$1.25 in cans; in
bags, \$1.24, f.o.b. Langloeth, Pa.; Wash-
ington Pa., \$1.24.



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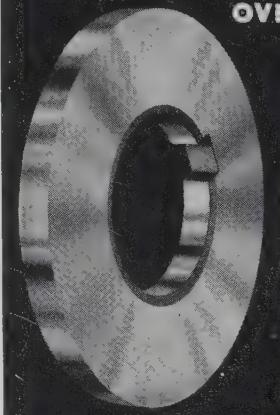
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Lock Co. Inc., Napa, Calif. Kaiser and Basalt have had a working agreement for more than six years, with Basalt using Kaiser plates in its pipe fabricating. Basalt has two modern steel fabrication plants—one in Napa and one at Fontana, near Los Angeles. Other operations of Basalt, primarily in the field of concrete aggregates, will not be affected by the purchase.

Iron Ore . . .

Iron Ore Prices, Page 135

The Great Lakes fleet hauled 2,44,959 gross tons of iron ore to lower lake ports in the week ended May 2, reports the Lake Superior Iron Ore Association. This compares with 1,137,625 tons brought down in the like week of the 1954 shipping season. Shipments in the 1955 season stand at 4,116,371 tons. This is 2,269,012 tons ahead of shipments up to May 2 in the 1954 season. During April, the fleet moved 3,758,006 tons, against 1,524,702 a year ago.

European interests are reported planning a major movement of iron ore from Texada Island, B. C. It is said five freighters already have been chartered at \$9.50 a long ton, free loading and discharge. The port of discharge is not stated. The Texada mines have shipped about 1 million tons of ore to Japan in recent years.

Pig Iron . . .

Pig Iron Prices, Page 129

Pig iron business in most districts is rising gradually. Trading in April was slightly better than in March, and prospects for May are reasonably encouraging. However, the situation is still far from active.

Midwest foundries have been experiencing a pickup in order volume during the last two months, and they have increased melting operations proportionately. However, with vacation closings approaching, they are holding their inventories of pig iron to a minimum.

Demand has leveled off in New England. Most users are operating short-term schedules on spot incoming orders without maintaining substantial order backloggs. Basic melt is slightly heavier: Steel foundries are doing 5 to 10 per cent better than they did last year; those making heat-resistant castings, alloys and stainless, somewhat higher. Business of the leading producer of large steel and alloy valves lags slightly below that recorded in the first four months of last year.

In the St. Louis district, demand

is declining owing to slack foundry business. Steel foundries in the area, many of them predominantly railroad suppliers, continue on a three or four-day week.

Imports are light on the East Coast, although 400 tons of Spanish iron were received recently by a northern New Jersey consumer against an old order.

Youngstown Sheet & Tube Co. lighted its Hubbard, O., blast furnace which had been out of blast more than 15 months. This will give the company more hot metal for its Campbell and Brier Hill Works.

Structural Shapes . . .

Structural Shape Prices, Page 124

Structural fabricators' prices are reported stiffening, reflecting in part the expectation that shape prices will go higher in the third quarter as the result of a steel wage increase.

In general, the seasonal improvement in demand for structurals continues. Public construction of all kinds, including highwaywork, is being added to materially by a steady flow of industrial and commercial building on private account.

Eastern fabricators report demand still spotty. However, more tonnage is under contemplation in the area and prospects are definitely better than they were a few weeks ago. New inquiry is featured by substantial thruway work in the western part of New York.

New structural projects up for early bidding in the Pacific Northwest include Tacoma's county-city building, involving about 700 tons, and an equal tonnage for the proposed Owens-Illinois Glass Co. factory and warehouse at Portland, Oreg. Alaskan military installations will require substantial tonnages. Fabricating plants in the area are reported holding backloggs extending six months. Competition is keen, however, for all new projects that appear.

Supply continues to tighten at all points, with little shape tonnage available for delivery before August. The pinch is especially noticeable in the wide flange sections.

The largest contract for fabricated structural steel in New England involves 17,300 tons of tunnel frames for the Central artery, Boston. It went to Bethlehem Steel Co. at \$3,591,265, fabricated and delivered. The second on direct bids was American Bridge Division, U. S. Steel Corp., Pittsburgh, at \$3,742,289, with the Ernst Construction Co., Buffalo, third at \$4,383,909.

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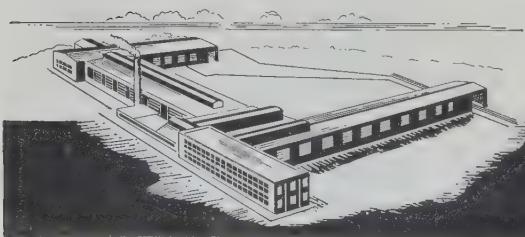
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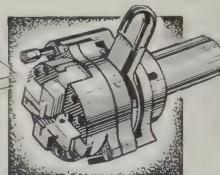
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crap . . .

Scrap Prices, Page 142

Philadelphia—The scrap market is gging. Prices on several leading eel grades are down. In the cast on grades, heavy breakable prices re easy, though unchanged.

Despite high mill operations, most ading consumers are in a comfortable position, with supplies moving airly freely.

Largest recent purchases were by Fairless, Pa., consumer, involving perhaps 15,000 to 20,000 tons. his mill dropped its price to \$36.50, elivered, on the No. 1 grades—heavy melting, bundles and busheling. However, it paid higher than previously or No. 2 bundles (\$29). No. 2 heavy melting was involved in the purchase, although the market on that grade is down to \$33, delivered.

Despite the \$36.50 paid by Fairless on No. 1 bundles and No. 1 busheling, the market on these grades holds at a spread of \$36.50-\$37.50, delivered. No. 1 heavy melting, however, is holding at the flat \$36.50 level.

Prices on No. 2 bundles cover a wide spread of \$27-\$29, delivered. Electric furnace bundles are off to \$39.50; machine shop turnings and mixed borings and turnings to \$21.50; and short shovel turnings to \$24. Structural and plate are lower at \$40-\$41, delivered; couplers, springs and wheels at \$42; and rail crops at \$51-\$52.

Export shipments were interrupted here last week by a port strike.

Cleveland—Steelmaking grades of scrap are off \$2 a ton here, reflecting a sale in the Valley at a top price of \$35. The mills are virtually out of the market here. The combination of large use of hot metal, substantial mill inventories and heavy flow of tonnage to the market serves to depress dealer prices. Despite high level steel operations, scrap is accumulating in dealers' yards, notably

No. 2 bundles which are practically a drug on the market.

Cincinnati—A moderate tonnage of scrap was purchased last week by the local mill at prices \$1 to \$1.50 below previous levels. This resulted in the No. 1 grades dropping \$1.50 to \$31.50-\$32.50. No. 2 heavy melting fell \$1 to \$28.50-\$29.50. No. 2 bundles declined \$1.50 to \$22.50-\$23.50. Machine shop turnings and short shoveling turnings remained steady, but mixed borings and turnings went down \$1.50 to \$17.50-\$18.50. No. 1 railroad heavy melting declined \$2.50 to \$32.50-\$33.50.

Boston—Steel scrap prices are lower, with new buying light. The reaction in the market, however, is orderly. For export, prices paid at dock are off, but for domestic consumption, top grade No. 1 steel is resisting the downtrend. This grade commands \$32.50 dock. No. 2 bundles are off \$1.50 a ton.

New York—Brokers' buying prices on No. 2 bundles are off to \$23-\$24. Other melting steel grades are steady, owing primarily to strength in the export market. Prices on machine shop turnings, mixed borings and short turnings and low phos are unchanged. Cast grades also are steady.

Buffalo—Easier tendencies prevail in the local scrap market. The leading mill consumer made substantial purchases of steelmaking grades at price declines of \$1.50 a ton. Despite a high ingot rate, new business and lower prices reflected huge reserve stocks in mills and anticipated large receipts by water from the eastern seaboard and Midwest points.

Detroit—One local consumer came into the market last week for open-hearth grades at \$2 per ton below the previous purchase. No. 1 heavy melting is quoted at \$27.50; No. 2 heavy melting, \$21; No. 1 bundles, \$27.50; and No. 1 busheling, \$27.50. District steel ingot operations are estimated at 91.3 per cent of capacity, compared with 92 the preceding week and 63 a year ago.

Birmingham—Although electric furnace and specialty steel scrap items are strong, weakness has appeared in blast-furnace grades. Brokers predict the next mill purchases will be at lower prices. Firm prices prevail on the cast grades.

St. Louis—Prices are holding firm despite good outside shipments and generally plentiful supplies. Brokers note that the last time mills operated at 100 per cent of capacity, scrap was scarce. Mills now are taking all the material they can get

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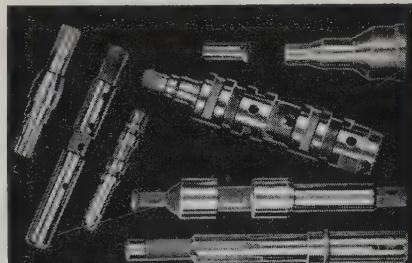
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(Please turn to page 144)

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

May 4	\$35.33
Apr. 27	36.00
April Avg.	36.73
May 1954	28.00
May 1950	33.82

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting...	35.00-36.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	35.00-36.00
No. 2 bundles	27.00-28.00
No. 1 busheling	35.00-36.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals, 5 ft lengths	39.00-40.00
Heavy turnings	34.00-35.00
Punchings & plate scrap	39.00-40.00
Electric furnace bundles	38.00-39.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	33.00-34.00
Heavy breakable cast	33.00-34.00
Unstripped motor blocks	22.00-23.00
No. 1 machinery cast	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt..	37.50-38.50
Rails, 2 ft and under	48.00-49.00
Rails, 18 in. and under	49.00-50.00
Rails, random lengths	44.00-45.00
Railroad specialties	43.00-44.00

Stainless Steel Scrap

18-8 bundles & solids	21.00-22.00
18-8 turnings	105.00-110.00
430 bundles & solids	95.00-100.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer's plant)

No. 1 heavy melting....	31.00-32.00
No. 2 heavy melting....	26.00-27.00
No. 1 bundles	31.00-32.00
No. 2 bundles	23.00-24.00
No. 1 busheling	31.00-32.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings	21.00-22.00
Cast iron borings	21.00-22.00
Low phos.	33.00-34.00
Cut structural plates 2 ft and under	37.00-38.00
Alloy free, short shovel turnings	26.50-27.50
Electric furnace bundles	31.00-32.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	35.00-36.00
Stove plate	41.00-42.00
Heavy breakable cast	31.00-32.00
Unstripped motor blocks	25.00-26.00
Brake shoes	30.00-31.00
Clean auto cast	43.00-44.00
No. 1 wheels	41.00-42.00
Burnt cast	31.00-32.00
Drop broken machinery	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt..	34.00-35.00
R.R. malleable	43.00-44.00
Rails, 2-ft and under	50.00-51.00
Rails, 18-in. and under	51.00-52.00
Rails, random lengths	45.00-46.00
Cast steel	39.00-40.00
Railroad specialties	39.00-40.00
Uncut tires	41.00-42.00
Angles, splice bars	46.00-47.00
Rails, rerolling	52.00-53.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)	
18-8 bundles, solids	200.00-210.00
18-8 turnings	100.00-110.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting....	34.00-35.00
No. 2 heavy melting....	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	24.00-25.00
No. 1 busheling	34.00-35.00
Machine shop turnings	16.00-17.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Low phos.	35.00-36.00
Electric furnace bundles	34.00-35.00

Railroad Scrap

No. 1 R.R. heavy melt..	35.00-36.00
-------------------------	-------------

CHICAGO

(Delivered consumer's plant)

No. 1 heavy melting....	33.00-35.00
No. 2 heavy melting....	30.00-31.00
No. 1 factory bundles	35.00-36.00
No. 1 dealer bundles	33.00-35.00
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-37.00
Machine shop turnings	16.50-17.50
Mixed borings, turnings	18.50-19.50
Short shovel turnings	18.50-19.50
Cast iron borings	18.50-19.50
Cut structurals, 3 ft	36.00-37.00
Punchings & plate scrap	37.00-38.00
Electric furnace bundles	35.00-36.00

Cast Iron Grades

No. 1 cupola	40.00-41.00
Stove plate	35.00-36.00
Unstripped motor blocks	29.00-30.00
Clean auto cast	45.00-46.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt..	37.00-38.00
R.R. malleable	46.00-47.00
Rails, 2-ft and under	50.00-51.00
Rails, 18-in. and under	51.00-52.00
Angles, splice bars	52.00-53.00

Stainless Steel Scrap

18-8 bundles & solids	220.00-225.00
18-8 turnings	95.00-100.00
430 bundles & solids	105.00-110.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	27.50
No. 1 Heavy Melting High Low Close Oct.	37.50*
No. 1 bundles	27.50
No. 2 bundles	20.00
No. 1 busheling	27.50
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings	17.50
Punchings & plate scrap	34.00

Cast Iron Grades

Charging box cast	28.00
No. 1 cupola	37.00
Heavy breakable	28.00
Unstripped motor blocks	20.00
Clean auto cast	42.00

BIRMINGHAM

(F.O.B. shipping point)

No. 1 heavy melting....	32.00-33.00
No. 2 heavy melting....	28.00-29.00
No. 1 bundles	31.00-32.00
No. 2 bundles	23.00-24.00
No. 1 busheling	32.00-33.00
Cast iron borings	17.00-18.00
Short, shovel turnings	25.00-26.00
Machine shop turnings	19.00-20.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	36.00-37.00
Structural plate, 2 ft	36.00-37.00
Unstripped motor blocks	35.50-36.50

RAILROAD SCRAP

(F.O.B. shipping point)

No. 1 R.R. heavy melt..	36.00-37.00
Rails, 18 in. and under	45.00-46.00
Rails, rerolling	43.00-44.00
Rails, random lengths	42.00-43.00
Angles, splice bars	43.00-44.00
Rails, rerolling	52.00-53.00

Stainless Steel

No. 1 R.R. heavy melt..	36.00-37.00
Rails, 18 in. and under	45.00-46.00
Rails, rerolling	43.00-44.00
Rails, random lengths	42.00-43.00
Angles, splice bars	43.00-44.00
Stand. steel axles	35.00-36.00

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting....	36.50
No. 2 heavy melting....	32.50
No. 1 bundles	36.50-37.50
No. 2 bundles	27.00-29.00
No. 1 busheling	36.50-37.50
Electric furnace bundles	39.50
Machine shop turnings	21.50
Mixed borings, turnings	21.50
Short shovel turnings	24.00
Structural & plate	40.00-41.00
Heavy turnings	34.00-35.00
Couplers, springs, wheels	42.00
Rail crops, 2 ft & under	51.00-52.00

Cast Iron Grades

No. 1 cupola	37.00-38.00
Malleable	44.00
Heavy breakable cast	41.00
Drop broken machinery	44.00

NEW YORK

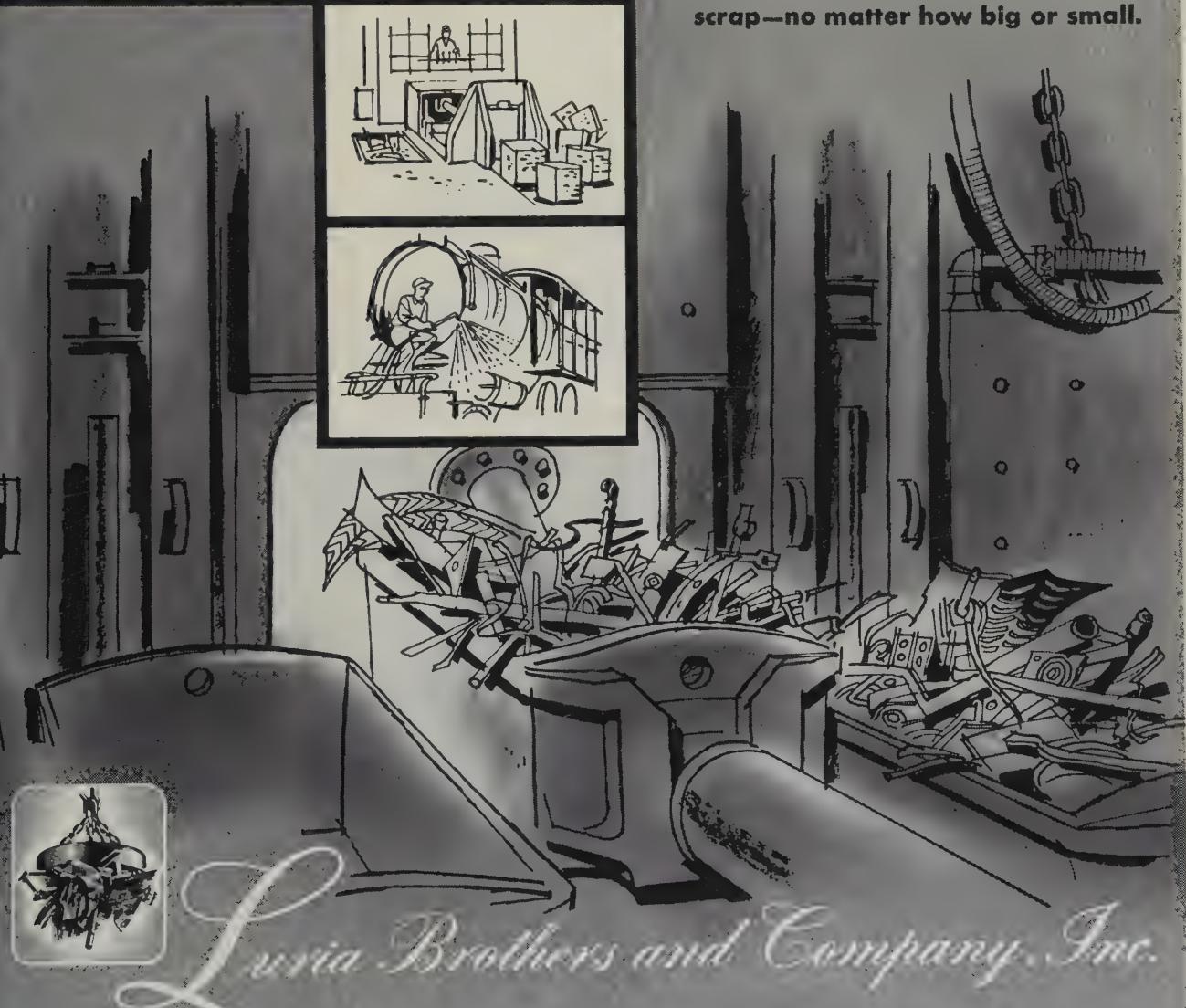
(Brokers' buying prices)

No. 1 heavy melting....	32.00-32.50

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For over half a century our experience, personnel, equipment and key office locations have contributed to the steady growth of the iron and steel industry. Possibly our facilities may help you solve a problem in iron or steel scrap—no matter how big or small.



Luria Brothers and Company, Inc.

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(Concluded from page 141)

at current prices, but are wary of bidding the market up. A price change in railroad scrap, possibly reflecting a drop of \$2 per ton in Chicago, was expected here when the Cotton Belt offered a diversified list of 16 items.

Chicago—Several important grades of steelmaking scrap are off \$1 a ton, to continue the weaker market trend. A leading mill announced its May buying prices on No. 1 industrial heavy melting, No. 1 factory bundles and electric furnace material at \$1 less than previous purchases. Other mills have bought No. 2 heavy melting and No. 1 railroad heavy melting for \$1 less than formerly quoted. It is difficult to figure the softer market tone at a time when new weekly ingot tonnage records are being set.

Washington—Governmental regulations and economics of the world market make it impossible for exported scrap to find its way behind the Iron Curtain. That's the comment of the Institute of Scrap Iron & Steel following a request by Sen. Olin D. Johnston (Dem., S. C.) for an investigation of the export situation.

All applications for scrap export licenses to destinations other than western hemisphere countries require certified documentary evidence that the exported material will not be transhipped from the country of destination.

The Institute maintains it is unlikely the six Schuman Plan (western Europe) countries, which take 40 per cent of American scrap exports, will release any tonnage—considering the steel shortage abroad. The United Kingdom accounts for 15 per cent of American exports and also pools its buying, while the Japanese take about 20 per cent. It is inconceivable that they are trading with the Reds.

Other countries buying American scrap are the Argentine, Canada, Mexico and Spain. Russia never has been a factor in the world scrap market.

Los Angeles—Mill buying is limited largely to specialty grades of scrap. Some electric furnace material, however, also is moving.

San Francisco—Steel scrap prices have advanced \$2 to \$3 a ton, with the top increase on the best grades. Mill operations here have stepped up surprisingly fast in recent weeks with a corresponding increase in scrap consumption. Cast iron grades are firm.

Seattle—One large mill is still paying \$33 and \$29 for No. 1 and No. 2 heavy melting steel, respectively, but dealers report prices generally are

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"KRANE KAR Unloads freight cars of billets weighing up to 6000 lbs.... Stacks them in yard... Transports billets to saw shop... Loads forgings on trucks for shipment. KRANE KAR is easier to use than our old stationary crane, and saves us time. Now we can make full use of our yard for billet inventory." Ask for Bulletin #79.

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Gas or diesel; adjustable telescopic boom; rubber tired;
1½ to 12½ Ton Cap.

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—FLUID DRIVE!



PRICE LIST ON HANNIFIN STOCK HYDRAULIC PRESSES

1-TON.....	\$ 552
2-TON.....	\$ 627
5-TON.....	\$1,286
8-TON.....	\$1,581
10-TON.....	\$1,855
25-TON.....	\$3,681

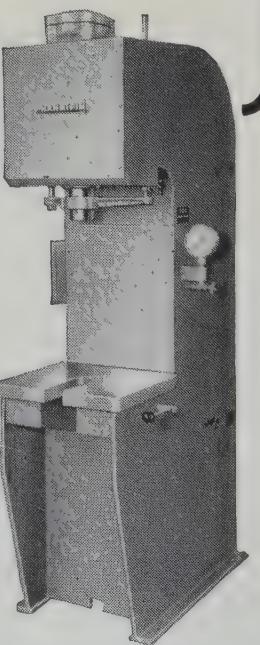
Prices complete with motors and starters F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.

DELIVERY FROM STOCK

Demand for these popular presses is so consistent we are able to produce them in quantity and pass the savings along to you.

Construction-wise and quality-wise these small general-purpose presses are identical to the larger Hannifin presses, up to 150 tons. Special, optional controls when needed.

WRITE for complete information on the Hannifin Hydraulic Press you're interested in.



HANNIFIN

HANNIFIN CORPORATION, 523 S. WOLF ROAD, DES PLAINES, ILLINOIS

\$2 to \$31 and \$27, with supplies equate for current increased mill assumption.

Recent full cargo charters for rap include May-June, Los Angeles loading, Japan discharge, at \$142,000, free loading and discharge. Another cargo, steel shavings, Los Angeles

Antwerp-Rotterdam, early June loading, is valued at \$161,000, free and out. Ships will carry 9000 10,000 tons each.

Bankers Life & Casualty Co., Chicago, successful bidder for about 35,000 tons of used equipment and steel scrap in the Aleutian Islands, has been given governmental permission to bring in 250 Japanese laborers for a period of 200 days to assemble ship the material. It is claimed American labor is not available. Immigration officials will not issue a permit unless qualified American labor is at hand. Union officials strongly oppose importation of laborers.

The material is intended for export to Japan. However, assembling and loading it into ships in unsheltered areas is difficult.

Semifinished Steel . . .

Semifinished Prices, Page 124

Bethlehem Pacific Coast Steel Corp., San Francisco, last week placed a third 75-ton, open-hearth furnace in operation, boosting its operating rate to 80 per cent of capacity, the highest this year. Sixty employees were recalled.

Rails, Cars . . .

Track Material Prices, Page 127

The Greenville Steel Car Co., Greenville, Pa., has booked an order from the Bessemer & Lake Erie railroad for heavy repairs on 250 of its 0-ton, twin-hopper cars. The job involves repairs from the underframes up. Work begins in August.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

150 tons, plant construction, P. H. Glatfelter Co., Spring Grove, Pa., to Belmont Iron Works, Eddystone, Pa.

100 tons, 17-story apartment, Peter Doelger Inc., 72nd St. and 2nd Ave., New York, to Harris Structural Steel Co., that city.

80 tons, roof supports, turnpike tunnel, Lehigh and Carbon counties, Pa., through Lipsett, to the Commercial Shearing & Stamping Co.

50 tons, factory building, Armstrong Cork Co., Millville, N. J., to Max Corchin & Son, Philadelphia.

10 tons, Pacific Federal Savings & Loan Bank building, Portland, Oreg., to Pacific Car & Foundry Co., Seattle.

10 tons, high school, Shamokin, Pa., to Anthracite Bridge Co., Scranton, Pa.

80 tons, dormitory and Packer Hall addition, Lehigh University, Bethlehem, Pa., to Bethlehem Fabricators, that city.

10 tons, five radome installations, Alaska, to

Bethlehem Pacific Coast Steel Corp., Seattle; Puget Sound-Drake, general contractor.

170 tons, warehouse and shop buildings, Air Force base, Portsmouth, N. H., to United Structural Steel Co., Worcester, Mass.; Granger Contracting Co., Worcester, general contractor.

STRUCTURAL STEEL PENDING

4265 tons, Iroquois dam, near Point Rockaway, St. Lawrence county; also 2900 tons, steel sheet piling for cofferdams; bids May 26, New York State Power Authority, New York; contract also includes erection, 6630 tons, gates and guides, and 900 tons, gantry cranes.

2215 tons, 12 bridges, Massachusetts turnpike, Hopkinton-Westboro-Ashland-Framingham, Mass.; bids May 10, Boston.

2015 tons, seven bridges, Palmer, Mass., Massachusetts turnpike; Berianti Construction Co. Inc., Harrison, N. Y., low on general contract.

995 tons, state bridge work, Camden county, N. J., bids May 17; 431 tons of reinforcing steel also required.

750 tons, two 3-span and one 5-span stringer bridges, Canton-Dedham-Westwood, Mass., bids May 10, State Department of Public Works, Boston; also 340 tons, reinforcing bars.

700 tons, factory and warehouse, Owens-Illinois Glass Co., Portland, Oreg.; bids to Oakland, Calif., headquarters, May 17.

700 tons, county-city building, Tacoma, Wash.; bids soon.

630 tons, state highway bridge, Aroostook river, Ft. Fairfield, Me., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Verrier Construction Co., Portland, Me., general contractor.

500 tons, three bridges, Massachusetts turnpike, Sturbridge, Mass., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Henley-Lundgren Co., Shrewsbury, Mass., general contractor.

435 tons, three three-span beam bridges, F. E. Everett turnpike, Concord, N. H.; bids in.

400 tons, two pumping plants, Hanford Works; general contract awarded Hoffman Construction Co., Portland, Oreg., low at \$1,392,985.

210 tons, four state highway bridges, Dennis-Harwich-Brewster, Mass., bids May 10, Boston; also 100 tons, reinforcing bars.

180 tons, three single composite beams with skewspan bridges, Ansonia-Derby, Conn., bids May 23, Hartford, Conn.; also 175 tons, reinforcing bars.

105 tons, two I-span, WF-beam bridges, Glover, Vt.

100 tons, two one-span WF beam bridges, Jamaica-Londonderry, Vt.

100 tons, two-span, WF-beam bridge, Shelburne, Vt.

Unstated, engineering test reactor, \$10-million project by private investors; bids to Atomic Energy Commission, Idaho Falls, Idaho, July 1.

REINFORCING BARS . . .

REINFORCING BARS PLACED

775 tons, two bridges, Massachusetts turnpike, including Chicopee river, Ludlow-Wilbraham-Palmer, Mass., to Truscon Steel Division, Republic Steel Corp., Boston; Brunelli Construction Co., Southington, Conn., general contractor.

200 tons, West Valley School, Yakima, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; W.A.M., Bartram & Sanford, Junction City, Oreg., general contractor.

110 tons, guardhouse, Ft. Lewis, Wash., to Northwest Steel Rolling Mills Inc., Seattle; Macdonald Building Co., Tacoma, Wash., general contractor.

REINFORCING BARS PENDING

18,730 tons, Barnhart Island power plant, St. Lawrence power project, near Massena, N. Y.; Savin Construction Co., Hartford, Conn., and Merritt-Chapman & Scott Corp., New York, low joint contractors.

3000 tons, also 1000 tons of plates and 500 tons of shapes; Tacoma, Wash., Mayfield

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RAILWAY CARS —

ALL TYPES

"SERVICE-TESTED"

FREIGHT CAR REPAIR PARTS

For All Types of Cars

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Flat Bars 22" x 3"; 16" x 3 1/2"

Motor 75 H.P. wght. 80,000 lbs.

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TOP FLIGHT EXECUTIVE VICE PRESIDENT willing to make a substantial investment in an old established very profitable steel plate fabricating plant. Must be well qualified in all phases of the business. Good qualifications will put you in line for President within two years or sooner. Reply Box 250, STEEL, Penton Building, Cleveland 13, Ohio.

SHOP SUPERINTENDENT
With structural background and bridge shop experience for central Ohio plant. Must be familiar with all types of bridge work and capable of handling all engineering problems for Shop producing approximately 1800 tons per month. Reply Box 254, STEEL, Penton Building, Cleveland 13, Ohio.

Representatives Wanted

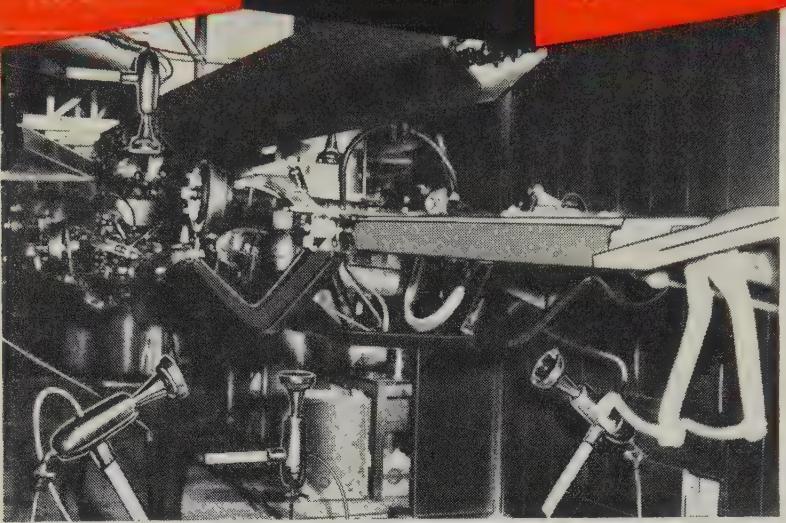
MANUFACTURER'S AGENT
Screw machine products company with 50 years' experience wants representation covering Indiana and northern Ohio. Commission basis. Reply in confidence advising experience and qualifications. Reply Box 255, STEEL, Penton Building, Cleveland 13, Ohio.

**9 TIMES MORE
PAINT MILEAGE
ON AUTOMOBILE
CHASSIS!**

STUDEBAKER

gets a better, more uniform, paint job on chassis as production is increased and finishing costs are cut substantially with

**RANSBURG
NO. 2 PROCESS
Electrostatic
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● When Studebaker Division, Studebaker-Packard Corporation switched to Ransburg No. 2 Process of Electrostatic Spray painting on their automobile chassis, paint mileage was increased 9 times.

By simply putting the paint where it's supposed to go, Studebaker cut daily paint consumption on the chassis production line from 14½ drums to 1½ drums. And, still they are painting 6 more chassis per hour with the No. 2 Process.

In addition to getting better, more uniform coverage with the asphalt-type coating, paint and labor costs were cut 70¢ per chassis. In eliminating the former set-up with 2 water wash booths and 12 automatic spray guns, they save nearly 1000 square feet of badly needed floor space.

Another on-the-job-example of the unmatched efficiency of the Ransburg No. 2 Process in which quality of the work is improved . . . AT LESS COST!



Studebaker also uses the Ransburg method to apply a heavier and more uniform primer surfacer on automobile bodies.

Whatever your product—large or small—if your production justifies conveyorized painting, it's possible that one of the Ransburg electrostatic processes can do the job better, with substantial savings to you. We'll be glad to tell you about complete Ransburg services.

Write to Dept. S.

ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

dam; bids postponed from May 27 to June 3.

1655 tons, 12 bridges, Massachusetts turnpike, Hopkinton-Westboro-Southboro-Ashland Framingham, Mass.; bids May 10, Boston also 25,300 linear feet of steel piling.

1045 tons, seven bridges, Massachusetts turnpike, Palmer, Mass.; Berlanti Construction Co., Harrison, N. Y., general contractor also 25,000 linear feet of steel piling.

431 tons, state bridgework, Camden county N. J., bids May 17; 995 tons of structural also required.

215 tons, three bridges, Massachusetts turnpike, Sturbridge, Mass.; Henley-Lundgren Co., Shrewsbury, Mass., general contractor

153 tons, Washington state, Spokane county girder bridge; bids to Olympia, Wash., May 17.

100 tons or more, storage igloos, Great Falls, Mont.; general contract to Pappin Construction Co., Great Falls, low at \$243,239 to U. S. Engineer, Seattle.

100 tons, Montana state highway bridge, Glacier county; general award to N. A. Nelson Construction Co., Sheridan, Wyo., low at \$131,371.

Unstated, 5710 feet Utilidor construction, etc. Ladd Air Base, Alaska; S. S. Mullen Inc., Seattle, low at \$1,512,893 to U. S. Engineer.

Unstated, waste crib, control structures, etc. Hanford Works; bids to Atomic Energy Commission, Richland, Wash., soon.

PLATES . . .

PLATES PLACED

1100 tons, large diameter caisson pipe, radar offshore tower, to Bethlehem Steel Co., Quincy, Mass., yard.

450 tons, seven fuel storage tanks, Adak, Alaska, Navy installation; to Hammon Iron Works, Provo, Utah; general contract to Raber & Kief, Seattle, low at \$1,168,975.

220 tons, large diameter pipe, Massachusetts turnpike, near Springfield, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Brunell Construction Co., Southington, Conn., general contractor.

PLATES PENDING

1790 tons, special treatment, dimpled; bids May 10, Navy Purchasing Office, Washington.

1515 tons, high tensile; Navy Purchasing Office, Washington, May 10.

125 tons, 300,000-gal, elevated water tank, Air Force base, near Glasgow, Mont.; bids to Corps of Engineers, Walla Walla, Wash.

Unstated, six Alaska military installations fuel storage; bids in to U. S. Engineers Seattle.

PIPE . . .

CAST IRON PIPE PENDING

200 tons, system extension, Yakima, Wash., bids May 9.

STEEL PIPE PENDING

Unstated, approximately 1700 feet, 16 and 24-in. pipe for Hanford project; bids invited by Atomic Energy Commission, Richland, Wash.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National, one 2400-hp, general purpose diesel locomotive to the Canadian Locomotive Co.

Northern Pacific, 38 diesel-electric units, with one 1600-hp road switcher going to Alco Products, New York, and twenty-five 1750-hp road switchers, two four-unit 7000-hp freight locomotives, three 1200-hp switchers and one 1750-hp freight unit, going to the Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Canadian National, 20 baggage cars, to National Steel Car Corp.

RAILS PLACED

Boston & Maine, 2000 tons, to Bethlehem Steel Co., Bethlehem, Pa.

Advertising Index

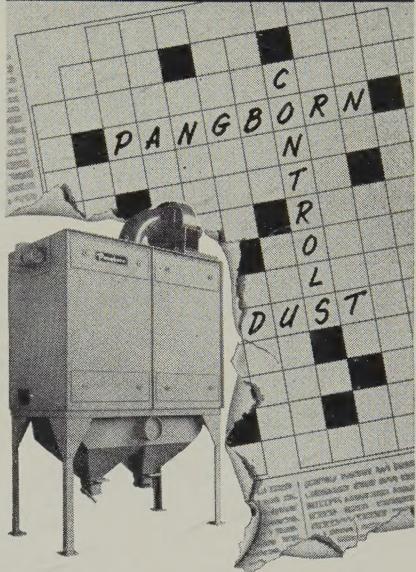
ims, R. P., Co., Inc.	134
na-Standard Engineering Co., The	
x Electrothermic Corporation	24
x Gehey Ludlum Steel Corporation	148
s-Chalmers	Inside Front Cover
oy Metal Wire Division, H. K. Porter ompany, Inc.	91
minum Company of America	132
merican Brass Co., The	111
merican Gas Furnace Co.	136
merican MonoRail Co.	20
merican Screw Co.	13
merican Welding & Manufacturing Co., The	38
merican Zinc, Lead & Smelting Co.	121
merican Zinc Sales Co.	121
onda Wire & Cable Co.	75
ul Chemical Co., Fire Equipment Division	23
nstrong Cork Co.	87
as Car & Mfg. Co., The	10
as Mineral Products Co.	25
cer-Raulang Co., The	3
mont Iron Works, The	138
lehem Steel Co.	1
sw-Knox Co., Union Steel Castings Division	28
ss, E. W., Co.	8, 9
id Foote Gear Works, Inc.	101
ndt, Charles T., Inc.	106
owning, Victor R., & Co., Inc.	140
ffalo Bolt Co., Division of Buffalo-Eclipse orporation	113
ndy Tubing Co.	30
dman, A. W., Mfg. Co.	138
rboloy Department of General Electric Co.	34
allenge Machinery Co., The	6
icago Rawhide Manufacturing Co., Oil Seal ision	53
isholm-Moore Hoist Division, Columbus	
McKinnon Chain Corporation	90, 133
cinnati Milling Machine Co., The	54
ties Service Oil Co.	69
ark Equipment Co., Industrial Truck Division	71
leveland Steel Tool Co., The	140
leveland Tramrail Division, The Cleveland Crane & Engineering Co.	112
ld Metal Products Co., The	85
olumbus McKinnon Chain Corporation, Chisholm-Moore Hoist Division	90, 133
one Automatic Machine Co., Inc.	14
paper Alloy Corporation	65
owles Chemical Co.	115
owles Tool Co.	138
osby Co., The	37
rcible Steel Company of America	102
etroit Steel Corporation, Reliance Steel Division	42
lykem Co., The	138
estern Machine Screw Corporation, The	140
anton Manufacturing Co., Reliance Division	119
ie Bolt & Nut Co.	64
ederal Bearings Co., Inc., The	7
erry Cap & Set Screw Co., The	116
art Pitt Bridge Works	100
ster, L. B., Co.	141
eneral Electric Co., Carboloy Department	34
azier Steel Corporation	145
obe Steel Abrasive Co.	123
ay Iron Founders' Society, Inc.	22
reat Lakes Steel Corporation	58
mmifin Corporation	144
inson-Van Winkle-Munning Co.	18
ppenstall Co.	66
rsburgh & Scott Co., The	109
oughton, E. F., & Co.	95
draway Scales, Inc.	134
Inland Steel Co.	44
ron & Steel Products, Inc.	145
ronsides Co., The	29
Jones & Laughlin Steel Corporation, Warehouse Division	89
Kelite Products, Inc.	105
Kennametal, Inc.	21
Keystone Drawn Steel Co.	140
Kinnear Manufacturing Co., The	108
Lord Baltimore Hotel	141
Luria Brothers & Co., Inc.	143
McGill Manufacturing Co., Inc.	76
Markem Machine Co.	16
May-Fran Engineering, Inc.	96, 97
Metal Blast, Inc.	31
Morse Chain Co.	62
National-Standard Co.	15
National Steel Corporation	58
Norgren, C. A., Co.	110
Ohio Crankshaft Co., The	2
Ottawa Steel Products, Inc.	141
Pangborn Corporation	147
Pittsburgh Crushed Steel Co.	141
Pittsburgh Plate Glass Co., Brush Division	138
Porter, H. K., Company, Inc., Alloy Metal Wire Division	91
Ransburg Electro-Coating Corporation	146
Reliance Division, Eaton Manufacturing Co.	119
Reliance Steel Division, Detroit Steel Corporation	42
Republic Steel Corporation	26, 27
oebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation	17
Ryerson, Joseph T., & Son, Inc.	41
Service Steel	140
Sewall, E. B., Manufacturing Co.	140
Seymour Manufacturing Co., The	5
Silent Hoist & Crane Co.	144
Square D Co.	107
Steel Shot & Grit Co.	141
Thermal Research & Engineering Corporation	12
Thomas Flexible Coupling Co.	104
Timken Roller Bearing Co., The, Steel & Tube Division	Back Cover
Torrington Co., The, Swager Department	36
Treadwell Engineering Co.	72
Tube Reducing Corporation	11
Union Steel Castings Division, Blaw-Knox Co.	28
United States Safety Service Co.	140
Vaughn Machinery Co., The	93
Veeder-Root, Inc.	4
Verson Allsteel Press Co.	61
Victor Equipment Co.	35
Wallingford Steel Co., The	94
Ward Steel Co.	139
Wheland Co., The	139
Wiggins, John B., Co., The	114
Yoder Co., The	19

~ ~ ~

Table of Contents, Page 5

Classified Advertising, Page 145

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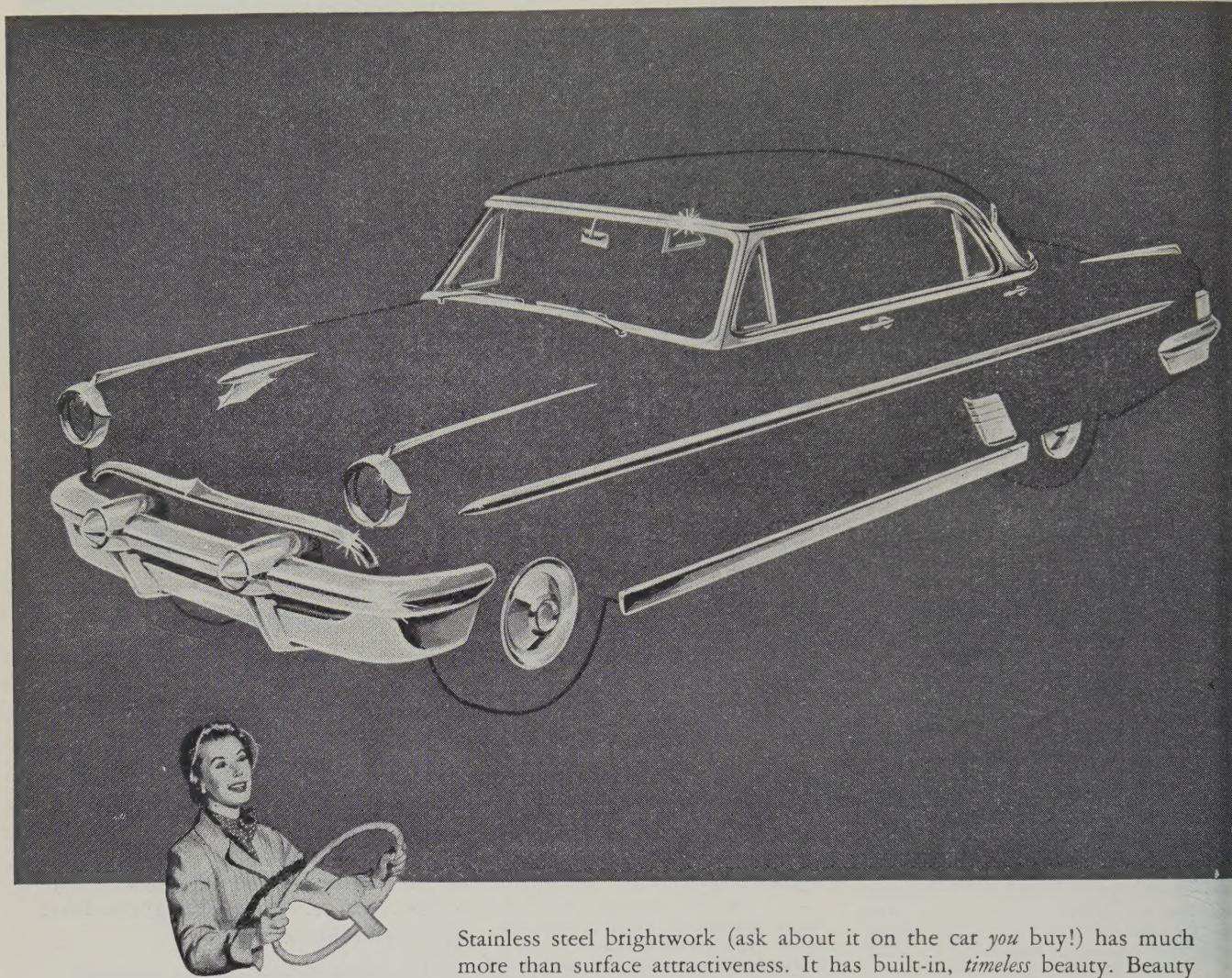
Pangborn Unit Dust Collectors give thorough, efficient dust control at any individual operation. Requiring little floor space, they can be located anywhere. Use the Pangborn Dust Collector to:

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Stainless steel brightwork (ask about it on the car *you* buy!) has much more than surface attractiveness. It has built-in, *timeless* beauty. Beauty that goes all the way through—doesn't scratch off or rust off. Beauty that lasts—outlives the car itself. And beauty that's practical . . . requires no weary polishing, just ordinary washing.

In fact, wherever it's used, Allegheny Metal delivers something extra in good looks, strength, service life and resistance to rust and wear. Even where its first cost is higher (and that's not always the case) stainless steel usually costs much less in the end, because it lasts so much longer than other materials.

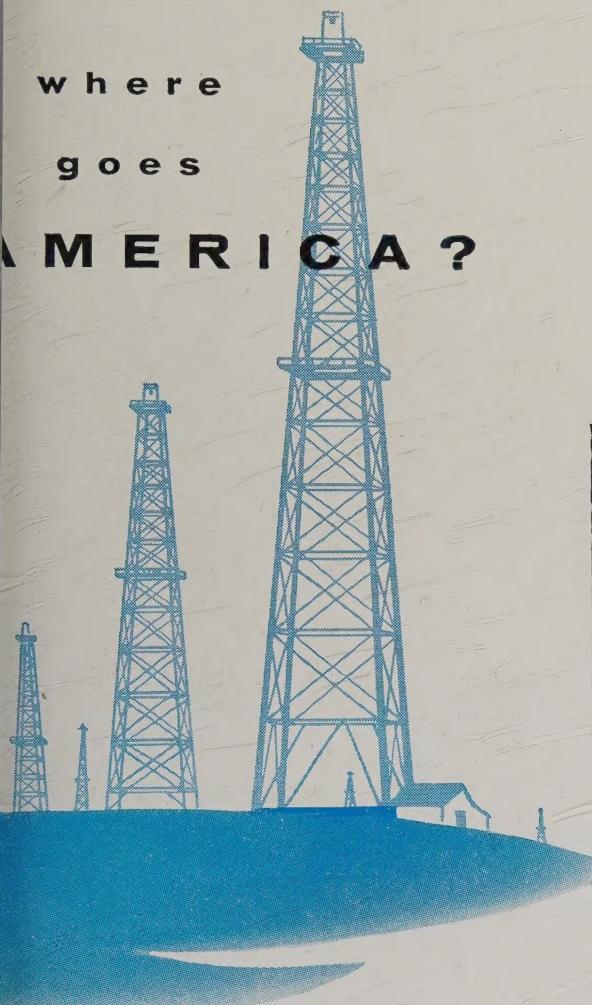
Allegheny Metal has given thousands of products a competitive edge: all sorts of products, from safety pins to railroad trains. Maybe there's a place in *your* business where it can boost sales appeal or reduce costs. Let's help you look. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.*

Make it **BETTER**-and **LONGER LASTING**-with
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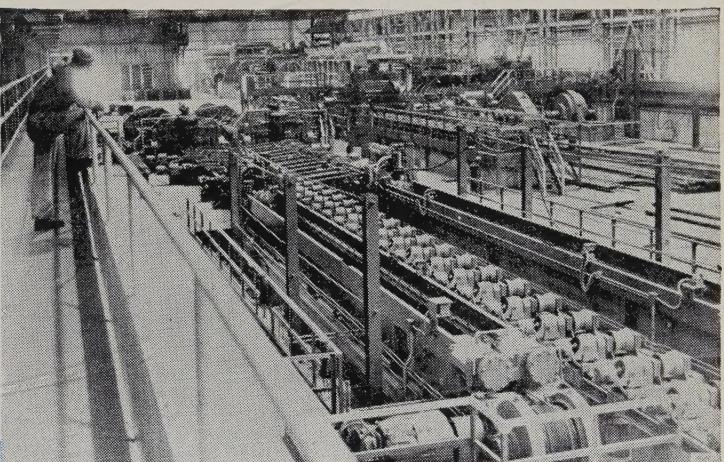
w h e r e
g o e s
A M E R I C A ?



★ America goes after more and more oil and gas as demands increase . . . up about 5% in 1955. More wells will be drilled, an estimated 54,500. The average depth goes deeper, now down better than 4,000 feet. More and more pipe-lines must be built . . . some 14,704 miles planned, approved or authorized. Every year more and more steel is required for production, processing and pipeline transportation per barrel of cubic foot of oil and gas.

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Most of the ideas about making seamless tubing have been worked out between the steel industry and Aetna-Standard in 54 years association. Many new ideas are available from Aetna-Standard to make your pipe mills more productive. Or, if you are considering new facilities, Aetna has the facts on which to base an intelligent decision.

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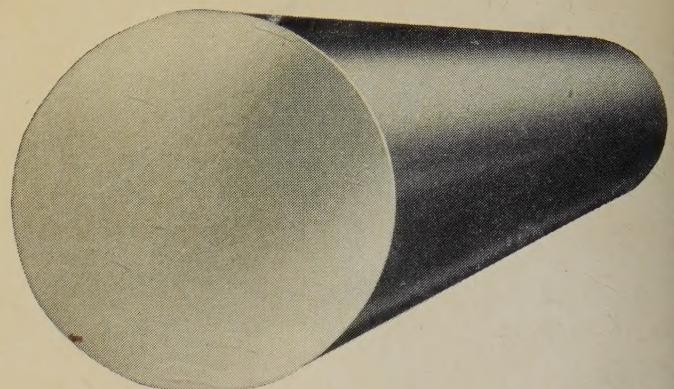
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PLANTS IN WARREN, OHIO • ELLWOOD CITY, PENNSYLVANIA

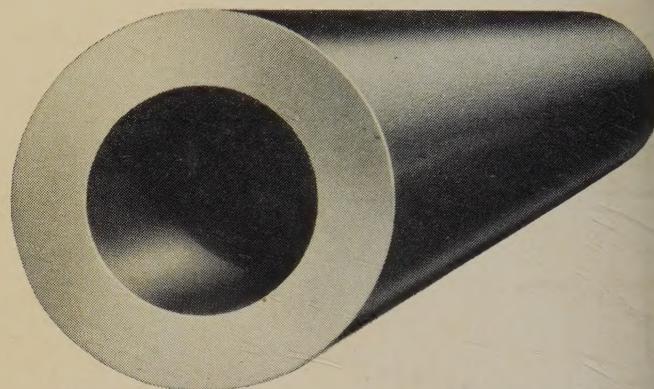
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Save steel, machining time!

WHY bore out bar stock to make hollow parts when Timken® seamless steel tubing lets you start production with the center hole already there? You don't waste steel and you save machining costs, too. Finish boring is often your first production step. Screw machine stations can be released for other jobs. So you add machining capacity without adding machines. And you save money because you pay only for the steel you use.

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It gives the tubing a uniform spiral grain flow for greater strength, and a refined grain structure which brings out the best in the quality of the metal. Timken Company's rigid quality control keeps quality uniform from tube to tube and heat to heat. The Timken Roller Bearing Company, Steel Tube Division, Canton 6, Ohio. Cable address "TIMROSCO".

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